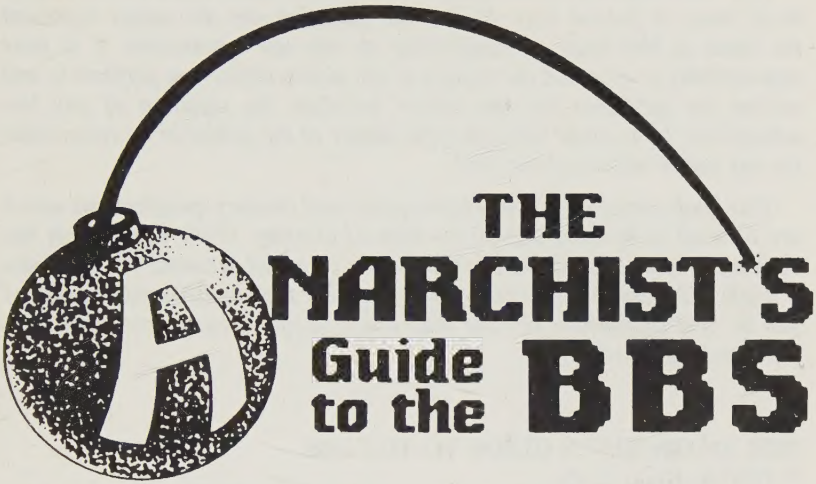
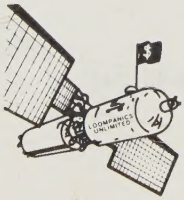
THE ANARCHIST'S Guide to the BBS

Keith Wade



Keith Wade



Loompanics Unlimited
Port Townsend, Washington

This book is sold for informational purposes only.

This book contains certain ideas which, if acted upon, could violate certain local, state, or federal laws. Neither the publisher nor the author represent the ideas in this book as conforming to any law whatsoever. It is your responsibility to ascertain the legality of any action before you perform it, and neither the publisher nor the author advocate the violation of any law whatsoever. In no event will either the author or the publisher be responsible for any use or misuse of this book.

This book contains technical information and product specifications which are believed to be correct as of the time of printing. While every effort has been made to be certain that all information is indeed accurate, no guarantee is made with respect to its accuracy, and neither the publisher nor the author will be held responsible for any inaccuracy or any consequences that arise from such inaccuracy.

THE ANARCHIST'S GUIDE TO THE BBS
© 1990 by Keith Wade
Printed in USA

All rights reserved. No part of this book may be reproduced or stored in any form whatsoever without the prior written consent of the publisher. Reviews may quote brief passages without the written consent of the publisher as long as proper credit is given.

Cover by Shellay Maughan

Published by:
Loompanics Unlimited
PO Box 1197
Port Townsend, WA 98368

ISBN 1-55950-037-9
Library of Congress
Catalog Card Number 90-061241

Contents

1. Introduction 1
2. What's a BBS, Anyway? 9
3. What's In It For Me? 15
4. How Do I Get Started? 21
5. The Five Hundred Dollar Anarchy Machine 25
6. The Systems 33
7. Using the Systems 45
8. Potential Problems 59
9. Your Own System 67
10. Afterward 83
11. Sources 85
12. Recommended Reading 89

Acknowledgements

To all the folks who contributed in making my life a nicer place.

The Family: Dad, Chris, Jack, Patty, Marty, Linda, Jenny, John, Carey, Hattie, Tom, Robert, Bennie, and, of course, all the others.

The Friends: Mary Susan Arnsparger, Ronald H. Bayes, Earl Bennett, Wilma Jean Brazelton, Jill Brooks, Joe Cesarotti, Kenny Clement, Diane Duquette, Heidi Greenfield, Michael Head, Bob Hopkins, Beth Horvath, Scott Hurst, Richard Kuhn, Bill Morgan, Doug Nugent, Bill Powell, Dick Prust, Jack Roper, Dennis Smith, Thomas Till, Bill Throop, Bill Walker, and Bonnie Zane.

About Keith Wade

Keith Wade was first exposed to computers at the age of 16, taking a high school programming course for, as he describes it, "lack of anything better to do at that time of day." He programmed extensively through college.

He is the author of several commercial software packages, has been employed as a programmer, has logged thousands of hours of bulletin board time, and is the author of Loompanics' *Poison Pen Letters* and *Your Revenge Is In The Mail* (both of which he hopes you'll buy).

Introduction

The purpose of this book is a simple one that can be summed up in a single sentence: to introduce the reader to the powerful communication medium known as the electronic bulletin board service, or BBS for short.

While enough technology is covered to enable you to use this medium effectively, this is not a book about technology. A little later we'll talk about RS232's and related mysteries, but if you want to know about printed circuit boards or RS232 pinouts, you won't find it here. In short, this is not a computer science book. And, while it's difficult to carry on a conversation about BBS's without the words "hacker" or "virus" coming up, this book doesn't talk much about either of those two things. If you are interested in these other subjects, please refer to the recommended reading list at the end of this book.

And finally, this is not a book on programming.

It is a book on how you can use one of the most powerful mediums of communication that has ever been invented: the BBS.

The BBS is a form of communication that provides many of the advantages of other forms of communication. It provides a public forum much like the bulletin board outside your local supermarket: you can write anything you want to and don't have to sign your name to it. Unlike the board which appears outside of the supermarket, however, the messages are read by hundreds (sometimes thousands) of people all over the country (sometimes all over the world). And, unlike the board outside of the grocery store, your messages can't be torn down, and can be left in private to one person or one group of people.

The BBS is a relatively new development. Once upon a time, computer technology was expensive. Several years ago, the best modems available were acoustical cups that went over the handset of your telephone and communicated at a rate which is now so slow that many boards don't even support it. As you will see in the chapter entitled "The Five Hundred Dollar Anarchy Machine," BBSing is now a very inexpensive hobby, and it is even less expensive when it is used as a medium of communication and not as a hobby. It's cheaper and safer than newspapers, better than leaving your message on bathroom walls, and far more difficult to track down than pirate radio. The days of computers being complex and unavailable are over; the computer is now the tool of the masses, and, as you shall see, a very powerful tool indeed!

The BBS has come under a great deal of attack lately. They are quite often accused of spreading "viruses" and have been labeled places where "hackers" exchange secrets. Neither of these slanders has much to do with reality, though. Do not let the fear of "viruses" or "trojan horses" scare you away from the fabulous world of the BBS. As we will examine later, neither of these threats should worry you too much.

Personally, I BBS a lot. I have the good fortune of living in a major metropolitan area that has well over one hundred free BBS's. I BBS for fun. But I also recognize this wonderful forum as having great potential for those who are truly interested in freedom. The BBS is a forum where the rights conveyed by the First Amendment of the United States Constitution have yet to be abridged, and as such, it is a forum that the lover of freedom ought to be aware of.

Happy BBSing to all of you!

A Few Necessary Terms

As I promised all of you, this is *not* a book of technogarbage, but rather an informative book that tells you what you need to know and points you in the correct direction should you wish to know more. While the technology that makes the BBS possible is indeed interesting, it is not the purpose of this work to delve very deeply into that technology. There are, however, a few necessary terms that you need to be familiar with. The most important ones are listed below and their significance is explained. These terms may have slightly different meanings outside of the BBS world. This is not intended to be a comprehensive list — just enough to get you immersed into the world of BBSing.

Baud: Baud is a measure of speed. 300 baud means that the modem is capable of receiving or transmitting 300 bits per second (roughly, 450 words per minutes). 1200 baud means that the modem is capable of receiving or transmitting 1800 words per minute. Most people use 1200 baud. Other common rates are 2400, 4800, and 9600. 300 baud modems annoy system operators because they are so slow. Higher speeds are good for uploading or downloading files, but sometimes suffer from line noise that is not present at lower speeds. The difference in purchase price between slow and fast modems is very minimal.

Bulletin: Bulletins are messages left for the general consumption of a board's users, generally by the SysOp.

Computer: Computers are, in sum, machines which have been programmed to perform different actions upon different antecedents, and can be had in forms as diverse as wristwatches and room-sized supercomputers. For our purposes, however, when we speak of a computer we are generally speaking of the personal computer, which is a relatively affordable machine which is designed for home or small office use. Properly configured computers can be used to communicate with other computers via telephone.

Download: To get a file FROM a BBS system.

E-Mail: An antiquated term that stands for Electronic Mail. All the messages that you see on a BBS are electronic mail. E-Mail is used on some boards to refer to private messages.

File: A file is text, programs, or other materials which are stored on a computer system. A file could be a letter to your mother, the latest version of Computer Killers in Space (in color!), or plans for breaking into a nuclear reactor. Unlike messages or bulletins, however, files are not normally read while you are connected to the BBS but are downloaded for use later.

File Compression: A method of reducing file size for uploading, downloading, and storage on the host system. Several methods exist, but you will be able to get a compression/decompression program on any board that uses compression. Basically, a compressed file takes up less space and can be transmitted more quickly. It can not, however, be used until it is decompressed.

Freeware: Freeware is software which is distributed free of charge by the author, for which he or she expects and demands no compensation whatsoever.

Host Computer: The computer which is running the BBS.

Line Noise: Something you'll learn to curse. Line noise is electrical disturbance at some point between your computer and the other computer with which you are communicating. Line noise corrupts data (when this happens you'll see checks or smiley faces on your screen instead of the letters and numbers you were expecting).

Log-On: What you must do to use a BBS service. To Log-On you will simply answer questions as they appear on your screen, giving your name and password (a secret password is maintained so that someone can not log on under your name and leave messages which would be attributed to you or read your private mail).

Message Security: On the two types of software that you are most likely to encounter, you will see something called "Security" every time you leave a message. Your choices are R/O (receiver only) or private (PCBoard and RBBS, respectively) which means that only you, the receiver, SysOps and people

with SysOp powers can read the message (A message is never *really* private as the SysOp and others with SysOp powers can read everything); Group, which means that only those who know the group password can read it; Sender, which means that you and only you (again, excepting the SysOp, who can do anything regardless of security levels) can delete or modify the message but that all can read it; or None.

Modem: A modem is a device to MOdulate and DEModulate information from a computer or a terminal. In essence, a modem takes information from a computer or terminal, translates it into a signal which can be communicated over a telephone line, transmits it to another modem, which then converts the signal back into information that the computer can understand. Almost all modems manufactured today are capable of interacting with all other modems. "Hayes compatible" means that a modem responds to what is now a defacto set of modem commands, and carries with it the same sort of compatibility guarantee that "IBM compatible" does with personal computers.

Multitasking: Multitasking is a software solution which allows your computer to do more than one thing at once. Multitasking requires a lot of memory, both for itself and for the two (or more) programs that you will be running at the same time.

Off-Line: Your computer is not talking to another computer.

On-Line: Your computer is talking to another computer.

Parity: This defines the word length of the data that is to be transferred and whether or not an error check will be made. The best way to deal with this is to leave the parity at the default that your software came with, changing it only if you need to for a board that you are using.

Pirate Board: A "pirate board" is a board that is known for engaging in, encouraging, or allowing its users to engage in illegal activities such as the posting of credit card numbers, long distance access codes, or copyrighted software without the author's consent.

Protocol: The method that your computer and the host computer will use to transfer data back and forth. Most people will

use a protocol that has error checking, which means that the data being transferred is checked to be certain that it is received correctly, and is retransmitted if errors occur.

Public Domain: Public domain refers to software which is not copyrighted and therefore can be distributed free of charge at will without compensation to the author. Software can be placed in the public domain by the author, or by expiration of the copyright.

RAM: Random Access Memory. RAM is the memory with which your computer works. RAM can be compared to a chalkboard; the more of it you have, the more calculations, doodles, and other functions you can do. A small chalkboard won't let you write long passages of prose; a small memory won't let you run complicated programs. RAM is sold in thousands of bytes (kilobytes, or Kbytes, or just "K"), with a byte being roughly one character, in multiples of 64. In other words, you can buy 64K, 128K, 256K, 512K, 1024K of memory. More and more users are purchasing at least 1024K of memory (1000K = one megabyte, or "meg").

ROM: Read Only Memory. ROM is the instruction set that comes with your computer. As the name implies, you can't do anything with it but read it. In essence, it is the instruction set that tells your computer to start itself up.

Script: A script is a short file that automates the log on process. As you'll find out, BBS systems always ask the same questions each time you log on. Depending on the software that you use, you can write a short program (or script) that will enable your computer to enter these responses without any intervention on your part.

Security Level: A numeric value, set by the SysOp, that determines what you may or may not do on the system, as well as how much time you are allowed each day.

Sex: The single biggest problem that new computer users have... Cables come in male and female. Cables or ports with pins sticking out of them are male. Cables or ports with holes in them are female. Thus, if you need a cable to connect your computer (with holes in it) to your modem (also with holes in it) you'd want to get a male-to-male cable. The number of

people with at least three absolutely useless cables lying around is astounding. Since the cable can cost you about a quarter of what a good 1200 baud modem can cost you ($25.00 for the cable and $100 for the modem at the time of this printing, depending upon brands and where you buy them), it's worth buying the right cable.

Shareware: Shareware is a software distribution concept which was developed on electronic bulletin board systems and is now the most widespread distribution system in use. Shareware is not free software, nor is it public domain. The basic concept is simple enough: the author allows you to use the software on a limited basis to decide whether or not you like it. If you elect to continue using it, you are supposed to send a certain sum to the author for the right to continue using it. In essence, shareware is a try before you buy type of marketing; it is not free software.

Software: Software is what makes your computer operate. In the BBS world, there are two sorts of software that you ought to be concerned about. There is the software on the computer which is running the BBS, and, as you'll learn a little later, most of it is pretty standard. Then there's the software that you will need to make your computer communicate with other computers. Most modems come with communications software. It is also available commercially and as "shareware" and "freeware."

SysOp: The SYStem OPerator is the person who owns the BBS, performs the routine housekeeping chores that come with it, and is kind enough to not only spend hours and hours of his or her time keeping the board running, but also pay the phone bill each month.

Terminal: A terminal is a device that connects to a computer and normally contains a keyboard and a display screen. Terminals do not process information (that is, terminals don't do anything except accept and receive information; computers process information). Terminals can communicate with remote computers.

Trojan Horse: A Trojan horse is a program which appears to be a useful program (perhaps a game or office organizer) but contains a harmful bit of code that executes at some given

time and does something bad to your system (such as erasing all your files or formatting your hard disk).

Upload: To send a file TO a BBS system.

Virus: A virus is a program that replicates itself over and over again, consuming valuable computer resources. Viruses are normally packed in Trojan horses.

What's a BBS, Anyway?

To many of you, the term BBS is somewhat foreign, and you may find yourself asking, "What's a BBS, anyway?"

A BBS is an electronic bulletin board system (or service). It is a place for people to leave messages, files, programs, and other material for each other.

A BBS is physically several pieces of equipment coupled with several pieces of software. While BBS systems vary, the most basic one would consist of a computer, a disk drive (probably a large hard drive to store the vast wealth of information that accumulates on popular boards), a modem, a telephone line, and, of course, the necessary cables to hook it all together. It would also include bulletin board software, which is what instructs the computer to behave in a certain way — in this case, as a bulletin board.

Systems vary greatly. I personally know the SysOps (system operators) of my area's two most popular systems. One has the board set up on his kitchen table. It takes up about two square feet and consists of an IBM compatable computer, a 40 meg hard drive (meaning that it can hold roughly forty million

characters of information), a monitor, an internal modem, and a keyboard cover to keep the cat from accidentally depressing the keys on the keyboard. It's small, takes up very little space, is unobtrusive, and is used by several hundred people each week.

Another popular system in my area has sixteen incoming telephone lines, custom operating software, and hundreds of users who pay a monthly fee for access. This particular setup looks like mission control for a space flight, utilizes various equipment, and requires a room which is dedicated solely to the operation of the board. Some systems are small and don't have much space for messages; some are quite large. Most systems are operated 24 hours a day; a few are operated only at night.

Most BBS systems are pretty similar though, and what follows will give you a general idea of how they work and what you can expect. To be certain, there will be exceptions, but what follows is generally true for most systems that you are likely to encounter.

After you have done all the things that you need to do to your computer and dialed the BBS (and all of this will be covered in later chapters; if you don't have the foggiest idea yet how you'd do this, you will soon enough), the BBS will usually present you with a line or two telling you which system you have used, and will then ask for your name. Some systems require you to use your real name, others allow and/or encourage "handles." In any event, after you enter your name, you are asked for your password. The password keeps others from using your name to leave messages or read your personal mail. If you have not logged-on before, the computer will ask you for some information about yourself (which you may or may not want to answer truthfully) and about your computer (which is used to make sure that data is sent to your computer in a form that your computer can interpret).

This process of giving your name and password is known as "logging-on." Until you have logged-on with a valid name and a valid password, you can not use the system. This is mainly for security purposes. Due to the nature of some boards, some SysOps "verify" users to be certain that they are actually adults. Some systems are X-rated, and some advocate the overthrow

of the government. Consequently, SysOp will want to be very certain of who is using the system. Some SysOps require verification by mail, a photocopy of your drivers license, or voice verification by phone. Some SysOps do not verify and allow you full privileges with your first call. In any event, you can not actually use the system until you have logged-on.

Once you are logged-on, you will most likely be presented with some information about the system and informed about whether or not you have any mail waiting.

Once all of this has happened (and it will all be explained in greater detail in later chapters), the fun begins.

There are two main operating systems for personal BBS's: PCBoard and RBBS. Both work the same on any board upon which they are installed. Other bulletin board systems may function differently, but will be very similar. Most systems are divided into "conferences." When you first log on to the system you are in a message area known as the main board, or main. This is where information of a general nature is often found, although how stringently this is enforced depends on the SysOp. Most systems also have one or more "conferences" for special interests. Some boards may have computer conferences, teen conferences, etc. Others will have conspiracy conferences, pervert conferences, and magick (that's magick with a "k," not what you see on TV) conferences. Some SysOps diligently enforce the subject matter on each conference. Others are not overly concerned with what you post or where.

Conferences serve several very important functions. First, new users are usually not allowed in conferences until they have been verified (some boards don't even let new users read the mail on the main board until they have been verified!). Second, the conferences provide a place for people of common interests to post messages. Having a monochrome monitor (black & white), I rarely read the messages on the conferences that deal with color graphics. Third, and perhaps most importantly, the conferences provide a place which is not accessible to the majority of the users. Many boards have "secret" conferences which are available to selected users only. Others have conferences which are available to contributing members only. One board has three secret conferences, none of which are available to most of the board's users. In sum,

conferences allow you to carefully select who can see messages. The restrictions may get stiffer as you approach the conferences that have subversive or adult material on them.

Most BBS systems also have file areas on them. Unlike messages, which are read while you are "on-line" (that is, actually connected to the host computer), files are normally "downloaded" and used later (messages can also be downloaded — more on that later).

Files vary according to the system. Some systems have no files (one local system delivers several lines of obscenities and then suggests that you go to the hardware store if you want files). Others have "text files" which can range from x-rated adult tales to news clippings on various items of interest. Other systems have programs in their file areas. Some systems have copyrighted software for the taking. This is illegal, of course, and is the reason that BBS's have gotten such bad publicity lately. Other systems have "Shareware" software. Shareware means, in a nutshell, that you must buy the program if you continue to use it, but may try it for free to determine whether or not it fits your needs. I call one board that claims to have 17,000 pieces of shareware. Shareware is usually far less expensive than its commercial counterparts, and some of it comes with printed manuals and all of the other goodies.

There's a good chance that any program you download will be in compressed form. However, all of the boards have a program available that will decompress the program so that it can be used. Some boards will not let you download programs unless you contribute some set amount of money for system operation (remember, there is a monthly telephone bill). Most systems will restrict your usage if you download every file on the system without uploading any of your own. You're expected to upload files if you download files. Taking without giving will not endear you to the system operator.

There also exist some special features which vary from board to board. Some boards have on-line games such as black jack, poker, or adventure games. The object of these, of course, is to accumulate the highest score. An interesting feature on some boards is a "match maker" function. In essense, this requires that you fill out a detailed questionnaire about yourself (some of them are quite explicit). Then you are allowed to browse

through the answers of other users in hopes of finding a match. Some boards have the same basic "match maker" function, but the match is for employers to find employees, often on a fee basis.

That pretty much covers the basics of the "host" system (that is, the system on which the BBS is running). Of course, there is also the system that is connecting to the BBS.

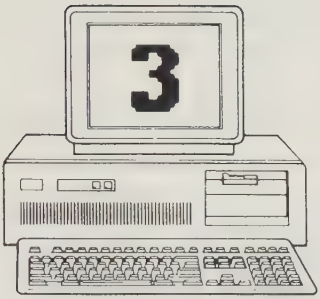
The systems used to call BBS's vary greatly. A basic system for contacting a BBS consists of either a terminal and a modem or a computer and a modem, and, of course, a phone line. The really nice part is that you do not need to have the same kind of computer on each end of the phone. Almost any computer can be used to contact a BBS system, and that includes the $100.00 computers that used to be on the market.

What you need to call a BBS is covered in a later chapter, as is what you need to set up your own BBS. In essense, if you have a computer or a terminal with a serial port (minimum investment $300.00 if you don't already have one and are buying new equipment), and a modem (minimum investment $100.00, including communications software and cable, if you don't already have one and are buying new equipment), you have what you need. Old equipment works just fine for this purpose, and you'd be amazed at the number of people with very old machines that would love to give them to someone. Communications is a pretty simple task for computers and doesn't require a lot of speed. Many of the first generation of home computers have been relegated to basements because they won't run massive spreadsheets or won't do lightning quick calculations. For several weeks when my computer was in the shop, I communicated with my regular BBS's using a thirty pound monster of a computer that someone paid a fortune for ten years ago and gave to me because I wouldn't let them throw it in the trash.

While it's true that computers speak different languages depending upon their manufacturer and operating system, the ASCII (American Standard Code for Information Interchange) standard is usually followed. What this means, in sum, is that when the host computer sends an "A" to your computer, your computer displays it as an "A," regardless of the brand of your computer or the brand of the other computer. There may exist

a computer or two that does not follow this standard; however, communications packages are available that translate into ASCII.

In this chapter, you have learned what a BBS is and something about how it works. In the chapters that follow, you'll learn how to use it to accomplish some things that are not possible with any other communications medium.



What's In It For Me?

The obvious question, of course, is "what's in it for me?" The answer, in a word, is "lots."

The BBS offers something that no other forum offers: the ultimate in free speech. Armed with your computer and modem, you can say anything, to an audience of hundreds or thousands of people who are, de facto, literate and at least somewhat intelligent.

If you *really* believe that you have free speech in many forums today, call up your local newspaper and ask them if they'd mind terribly if you used several inches of the front page to tell the world what twits you think they are. While they might — might — let you write a letter to the editor, even that would depend on what you had to say. You obviously could not talk about revolution, or firebombing your neighbor's car, or dumping raw sewage on the mayor's front lawn in any sort of an advocating way.

The BBS is a different animal, however. On a BBS, you are subject only to the laws of the SysOp, which are generally very

lenient. To be sure you will encounter systems that will not allow you to post ideas which the SysOp or some elite group of users does not agree with. You will also encounter systems which, because some of the users are quite young, will not let you post obscenities on the main board or certain conferences (if at all).

While you have the right to free speech on the corner, exercising it can indeed get you locked up. "Conspiracy to" anything is almost as bad as actually doing it, and your right to free speech is indeed abridged. Conspiracy to overthrow the government, conspiracy to manufacture narcotics, conspiracy to solicit prostitution, and all sorts of other conspiracies that one can talk about over a cup of coffee can get you locked up, perhaps forever. You might want to pay your municipal tax obligations in beer bottle caps, but suggesting it on the street corner just might get you in a bit of trouble.

You can say anything that strikes your fancy on a bulletin board, subject to the will of your friendly local SysOp. Boards have a number of diverse themes. There exist conspiracy conferences, diversity conferences, paedophile conferences, religion conferences, psychedelic conferences, and various other conferences. Boards have such names as "IllumiNet" and "Corner Drug Store," not to mention entries such as "Kink Link."

The secret to this free speech is the absolute anonymity that a bulletin board affords. On most boards, you can use a handle. On those boards that require that you use a real name, you can simply make one up. I've been known to assume a name at random on boards that require that you use your real name. And, if you do decide to leave your real name in the questionnaire that you're required to fill out, it is generally accessible only to the SysOp. It may be a good idea to use a bogus name on all the boards that you frequent. After all, while it's true that the SysOp can erase all of that information with several keyboard strokes, it might not be possible before the authorities break down the door. While I don't know of any instances of a board operator being the subject of litigation, several hackers have had late night visits by FBI agents who have caught them with their hands in the cookie jar, so to speak. There's never a very good reason for using your real name.

So, let's review the scenario. Let's say you have an unpopular and blatantly illegal idea that you want to share. Go out on the street corner, and the local gendarmes will hear what you have to say and will be more than willing to tell all about it at your trial. Make some nifty posters at home and you've provided paper evidence of your deeds. Set up a pirate radio station and operate it for long and you'll have some very unwanted visitors with shiny badges and evidence galore. But bulletin boards are quite different.

Bulletin boards offer several advantages that provide for a much safer environment. First of all, no one knows your name. Anyone can log-on under any name whatsoever. Even if you're known to use a handle, that doesn't necessarily mean that someone didn't beat you to that handle on another board. Suppose that you decide that you're going to assume the handle Richard McRichard. Proving that you are indeed the person who posts messages under the name Richard McRichard would be a formidable task. Anyone can log-on anywhere as Richard McRichard.

There is also very little evidence left of your deed when you post something on a BBS. The message remains, but it becomes difficult to prove who posted it. It may be possible to prove that you called a given number at a given time. And that time would no doubt agree with the time that the message was posted. One of the really nifty things about computer systems is that changing the time requires one to type only a simple command. Therefore, dates and times are fairly useless as identifiers on computer systems. Assuming that you gave bogus information when requested to enter personal details about yourself, the data stored in the system is of no value whatsoever in finding you.

In essence, BBS's are a forum on which you can say anything and which provide very little evidence that you said it. Some systems have "links" by which all the messages are shared with other systems; some of these links are nationwide and some are on a more local level. It is not unusual to see the same message reposted on more than one board, and it is not unusual to see messages left on a board on the west coast find their way back to the east coast in their entirety. While links will be discussed

in greater detail in a later chapter, the point is that you do have access to areas all over the country.

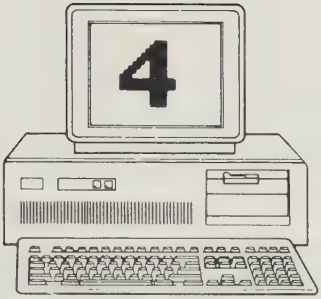
Bulletin boards are also fun. That's the main reason most people begin to frequent them. Once upon a time there was little more than technogarbage to be found on BBS's. There is still technical information available on many boards, if that is what you are interested in, but more and more boards are becoming "social boards." One of the boards that I use has frequent social outings where users get together and have a beer or two. And I've made more than one date with people I first contacted on one board or another. Most boards have "private mail" for this reason. (Mail is never really "private;" the system operator can read all mail, and certain other privileged individuals can also read all mail, regardless of what security level you decide to assign to it).

You'll quickly find that most boards have themes, and that within these boards various conferences with different themes exist. Thus, you don't have to read a lot of messages about, say, backgammon if that is not of interest to you; but if backgammon is your thing, you need not look very far for a board where others have a similar interest. Themes add to the fun (especially with "adult" boards) and also add to the utility of the system.

Being able to find people with similar interests can be of great use. You'll find that boards that specialize in "diversity" attract a group of people who have similar ideas. Additionally, while there may be a person or two in the *Overthrow* conference who is just there to argue, most people in a conference or on a particular board have a common interest. If your interest happens to be conspiracy, or witchcraft, or perverted sex, the absolute anonymity of the BBS makes it far easier to communicate with similar people. And, unlike newspaper ads, you need not give anyone a handwriting sample — nor need you give them your address — in order to continue to interact with them. The BBS makes screening contacts very easy indeed.

The BBS provides a contact point for like-minded individuals. Local groups almost always publish a list of all known BBS's within a given area, which is usually a metropolitan area surrounding a major city. However, statewide and nationwide lists

are available on several boards. On most of these lists you'll find a brief description of the board's special theme. This makes it easy to find boards that suit your special interest.



How Do I Get Started?

As we all know, the price of computer equipment has dropped drastically over the last several years. Once upon a time, telephone communication between computers was very slow, very expensive, and very difficult. That, quite fortunately, has all changed.

Communication between computers requires several things, which we will discuss in turn.

First, of course, you need a computer. As you may know, computers are either compatible with each other or not compatible with each other. If you have ever gone to purchase computer software, you have noticed that it is segregated by machine type. Computer software is not "one size fits all;" it will only run on the machine that it is made for or a compatible model.

Fortunately, this does not pose a problem with computer to computer communications. The vast majority of computer systems have adopted a standard for data input and output, known as ASCII. ASCII stands for American Standard Code for

Information Interchange. Computers read, write, store, and transmit information in the form of ones and zeros. Thus, what is transmitted over the phone line when two computers communicate isn't really the information displayed on the screen but a stream of ones and zeros. ASCII is the standard code for translating these ones and zeros back into usable information. Two computers that both use the ASCII format (and almost every computer does) may not be able to run the same software, but they will always be able to communicate with each other.

The sort of computer you use will depend a lot on what you intend to do with it. In a later chapter we will talk about setting up your own system, with specific suggestions regarding equipment. The requirements are far more basic if you intend to just call other systems and not run your own.

You will need a computer that uses the ASCII standard and has a serial port. A serial port is the connection through which the computer receives data and transmits data. This port is often called an RS-232, but RS-232 technically refers to the connection at the end of the cable. Some computers have "modem ports" that require the use of a special (and usually more expensive) cable. Some computer users may also wish to use an "internal modem" which fits inside the computer in an expansion slot. Most people prefer external modems, though internal modems are usually less expensive.

You will need a modem. The modem connects your computer to the phone line. Modem is an acronym for MOdulator DEModulator. Modulate means to take data from the computer and translate it into a form that can be transmitted over a phone line. Demodulate means to take the data from the phone line and translate it into a form that can be used by the computer.

Modems come in several speeds. 300 baud modems are very inexpensive and communicate approximately 450 words per minute. If you are buying a modem, don't buy a 300 baud modem. While they are inexpensive (I've seen new ones for $40.00), they are painfully slow. They are so painfully slow, in fact, that some system operators will not allow you to log on with one.

Next up in speed, and the most popular choice, is the 1200 baud modem, which transmits approximately 1800 words per minute. With the exception of a very few systems that operate only at 300 baud (and in my several years of experience in BBSing, I've never felt the need to call such a board back), almost every system supports 1200 baud. Most modems have a feature known as "fall back." What this means is that it attempts to connect to the other system at the fastest speed. If that fails, it "falls back" to the next fastest speed, until it finally reaches the speed of the other modem.

The next speed is 2400 baud, which is almost as popular as 1200 baud and is supported by a number of boards. 4800 and 9600 baud are supported by a few boards. Obviously, faster is usually better. Faster is always more costly as well. A 9600 baud modem receives and sends data 8 times faster than a 1200 baud modem. This is very nice if you are calling long distance and transferring files. Remember, though, that you can communicate no faster than the modem on the other end, and that if you are just reading the messages, receiving the data faster doesn't do much good as you must stop to read them.

You will need a cable to connect your computer to your modem. The cable runs from the serial port on your computer to the port on your modem. Ask your computer hardware dealer for assistance selecting the right cable — there are many different types and it's easy to get them confused.

You don't need any special cables to connect the modem to the phone line. Most modems have a modular phone jack built in — just like most telephones. If you have a modular phone, you can just unplug the line from the phone and plug it into the modem. Or you can buy a phone line wire (one usually comes with a new modem) and plug your modem directly into the phone jack on the wall.

Finally, you will need software. There are several ways to obtain software. Most modems will come with software, some of which is quite good and some of which is horrible but will allow you to function until you find something better. Most bulletin boards have a collection of communication software. While this book will not endorse any particular product, Procomm, a very popular program, is distributed as shareware (shareware can

be used for free until you decide whether or not you wish to keep it; if you decide to keep it you have to pay for it). As with most shareware programs, Procomm is also available as a commercial product.

If you go to your local software store, you'll in all likelihood see a rack of software in the $10.00 range. You won't find state of the art graphics or name-brand spreadsheets, but you'll almost always find a serviceable communications package.

You could just make yourself a copy of a friend's communication package. That, of course, is illegal, but the fact remains that lots of software theft goes on. If you had to, you could also write your own program or copy one from a book (many books have ready to run programs that you need only type in; they're often not fancy, but they will do until you can download something that you like better), but reinventing the wheel is something that I can't recommend.

Now that I've told you what you need to get started, there are a couple of exceptions. First, you don't really need a computer. You can also use a terminal, if you have one. But you can get a computer as cheaply as you can get a terminal, and a computer can be used for things other than communications, while a terminal can not. A terminal is just what its name implies — something which connects to the end of a computer. It does not compute and can do nothing when not connected to a computer. Using a terminal that you already have makes sense (as it means that you need only buy a modem); buying a terminal instead of buying a computer would probably not be a good idea.

Second, you don't really need a computer that uses the ASCII protocall. Several communications packages include translators which will allow for nonstandard protocalls. Again, if you have a computer that uses a nonstandard data handling method, by all means use it. But I would not suggest purchasing a computer that does not use the ASCII standard unless you have some particular need for it.

The Five Hundred Dollar Anarchy Machine

When I first began working on this project, I showed my outline to a friend, and she was quite surprised to see the words "The Five Hundred Dollar Anarchy Machine" as a subject. Can you really build a five hundred dollar anarchy machine? The answer is an unqualified yes; in fact, you may be able to do it for less.

The beauty of computers is that they are getting cheaper by the day. State of the art equipment is expensive; new developments are always expensive until they hit mass production. But, and this is the important part, to run an "anarchy machine" you need not have the latest equipment. If you are going to make your living programming, obviously you will need a good machine. But if all you plan to do is call BBS's and post messages, you need a much less elaborate set up.

So, what is the five hundred dollar anarchy machine? Basically, it's the equipment that you need to begin using bulletin board systems. The five hundred dollar anarchy machine is the basic components that you need to just "get your feet wet." How do you go about assembling a $500.00

anarchy machine? Well, first you need sources. Sources are, fortunately enough, easy to come by.

If you go into your local bookstore and journey to the magazine rack, you'll find one very large magazine that usually weighs in at several pounds: the *Computer Shopper*. This magazine is published once a month and has the largest collection of computer hardware and software that I have ever seen. It also has page after page of BBS lists, technical information, and addresses of local user groups. The last time that I thumbed through a copy, I found several full-featured, one diskette machines for under $300.00. Were they "top of the line" machines? Of course not (though there were also full featured top of the line machines advertised), but they were indeed good buys for $300.00. I also found 1200 baud modems for $49.00, complete with communications software. *Computer Shopper* is a magazine, of course, and each vendor has different terms and must be considered individually. But there are hundreds and hundreds of advertisements, and good bargains can be found. I have purchased quite a few things from the pages of *Computer Shopper*, and I have always been pleased.

You can also find bargains at your local computer shop. Products are often "orphaned," made obsolete by new products. I purchased my own personal computer and modem from a California mail order electronics outlet. It remains a nice machine. When I bought it, it was state of the art, and I paid roughly a quarter of what it was worth, because the manufacturer had discontinued its computer operations. A word of caution is in order here, however. Whenever you purchase off-brand equipment, you are taking a risk. A vendor who is out of business can not support your equipment. Computer repair is not cheap, but fortunately, not many computers ever need repair.

I purchased my computer through the mail at a steep discount. In the six years that I have owned it, I have only had to replace one chip, which was a five minute and twelve dollar proposition. Lots of good bargains can be found. Off brand equipment often comes with warranties. A good policy for checking out mail order firms is to obtain a year old magazine and see how many of the same vendors are listed; businesses

that have been around for a while are often a safer gamble when it comes to purchasing computer equipment.

There is also used equipment. Used equipment can be had at quite a bargain. Of course, you should always see used equipment operate before purchasing it. Carrying along a diagnostic disk can often be a good idea. If you have a friend with the same or a compatible model, getting them to loan you their diagnostic disk, which in essence checks every part of the system and then reports on it for you, should be no problem.

If you're out shopping for the "five hundred dollar anarchy machine," remember a few basic rules. First, you don't need a lot of bells and whistles. Amber letters read as nicely as red, blue, and purple letters, and a monochrome system is far cheaper than a color system. Lots of memory is nice if you are going to set up multiple jobs, run big spreadsheets, or edit very long documents; it is of far less utility if all you want to do is BBS. Be sure the system you purchase has a serial port, uses a standard protocall, and is capable of running communications software. Beyond that, the bells and whistles really aren't necessary for communicating. While the bells and whistles can be nice (you'd be amazed how quickly you give up your typewriter once you see how fast a printer can produce a document), they are not needed if you are building an "anarchy machine" which will serve no other use.

Once you get all of your equipment together, hooking it up should be relatively simple. After all, the people that you bought it from will explain how to assemble it. Basically, you plug the phone into the modem, the modem into the computer, and the computer into an electrical outlet. Turn the computer on, and you're ready for BBSing.

While your first call will be discussed in a few pages, something quite interesting will happen when you make your first call. You will, in all likelihood, reach a board, leave some information about yourself, and then learn that you can't do anything until you're "verified." Verification happens for a number of reasons. First, SysOps want to have some idea who is calling their systems. Most SysOps will want to know your real name, even if they don't require you to use your real name. Most will also ask for an address and business and personal telephone numbers. Then, depending upon the SysOp, a number of things

will happen. They may "voice verify" you, which means they will call you at home and satisfy themselves that you're an adult. Boards with adult subject matter will often do this. Or, they may just call the number to see if someone answers, assuming that if someone does, it's legitimate. Some systems require registration by mail, in which case there will be a form on the board that you are required to fill out and return. Again, it all depends upon the whim of the SysOp and it will vary from board to board. Some boards will give you access to all or most of the system immediately. Others will let you do next to nothing.

There are a number of different security levels which vary from board to board and depend upon the whim of the SysOp. Some systems will let you leave mail immediately but will not let you download files. Others will let you read mail but not post until you have been verified. The security level, which is assigned to you by the SysOp, will determine what you are able to do and not do, and will also determine how much time you are allowed each day. Certain systems will also require you to upload a certain number of files for each one that you download.

There are a number of ways to get your access taken away as well. Downloading a large number of files without uploading any will usually infuriate the SysOp and will often result in your not being able to use the system again. SysOps have a number of very unendearing terms for people that download lots of files but do little or nothing to support the system. Not participating in the system will often result in your access being taken away as well. Many SysOps get rather upset with people who log onto the system, read all of the mail, and then either make no response whatsoever or make all of their responses in private mail. Most SysOps expect the users to participate in the system since this leads to lively conversation. Except for pirate systems, which exist for the sole purpose of doing so, uploading copyrighted software, credit card numbers, or long distance access codes will also get you thrown off. Being a jerk will usually get you kicked off as well. And, while it goes without saying, violating the SysOp's rules, which are usually available in a bulletin, will also get you kicked off.

Some systems will increase your access if you pay a fee (and this fee varies); others don't want any money anyway (and re-

member, there are costs involved in running a board, from the monthly phone bill to system enhancements). Some boards will also increase your access if you make a habit of uploading files and programs. These policies will always be out there for you to read somewhere, usually in the bulletins.

Finding BBS's is often the most difficult thing for newcomers. There are a number of resources available to help you with this.

Lots of computer magazines publish a monthly list of all known bulletin board systems within a given area. *Computer Shopper* has a long list, as do several other publications. As you will learn very quickly, lots of numbers on the list will have been disconnected, but most of the boards on a recent list should still be in operation.

Local computer groups often compile lists of all known boards within a given area. These lists are often available from the group which compiled the list. These lists are circulated among the various boards as well. What that means is that once you find your first board, there is likely to be a list available of all known boards within the local area. These lists are usually compiled monthly, and many groups actually call every number on the list to verify that the board is still in operation.

Of course, any friends who are currently BBSing as a hobby may well be able to help you find systems. Often they have a list of their favorite boards and will be able to help you find ones that interest you.

There are also some interesting programs out there which will help you to find other BBS's. *All In One*, which is billed as the "ultimate hacker's utility," contains a sequential dialer like the one in the movies. It will call every phone number in a given area and make a list of those which are answered by modems. *AIO* is distributed as freeware and will be found on many boards free for the taking. *AIO* and similar programs allow you to turn on your computer, go off to work, and come home to a list of every modem in your area. While it's not particularly nice to the people who answer the phone (since they'll assume it's a crank phone call), it will produce a fine list of modems (many of which will be connected to BBS's). There are several such programs out there, each of which works a bit differently. *AIO* includes several other useful utilities and is definitely worth downloading.

If you use one of the national networks, it is likely that you will be able to locate a list of local boards or at least find some local users who are able to help you find local boards. For the most part, major metropolitan areas will have some sort of a list compiled.

Once you find a system, you have to have some sort of name so that the system will recognize you. Many systems demand that you use your real name. Others warn you that you should not use your real name. Most people will use the same handle on all of the boards that they frequent.

It's worth remembering that just because a system demands that you use your real name doesn't necessarily mean you have to. All you have to do is say "this is he" when and if they call to verify. If you say your name is George Washington and the SysOp calls to verify, all you have to say is "this is he" when the SysOp calls and asks to speak to George Washington. If you're going to be doing things of questionable legality, you may well not wish to use your real name. The SysOps may not appreciate your dishonesty, but there is no reason for them to ever find out.

Another thing you might want to consider is whether or not you wish to use your real phone number. If you make up a bogus phone number and the SysOp attempts to verify you, you will not get access. A good alternative is to leave another board's number as your home phone number and the phone number of a huge municipality or huge corporation as your work phone number. That way, if the SysOp calls to verify you at your "home number," he will either get a busy signal or the modem will answer, making it appear that you are currently using your computer. Should they attempt to call you at work (most won't, but it has been heard of), they'll be told politely and firmly that there are hundreds of employees and it's difficult to know who they need to talk to without an extension. This combination of numbers will usually satisfy even the most suspicious SysOp.

A very quick overview of how these BBS's work is in order at this point.

When you call a bulletin board system, several things happen. First, of course, your computer (or terminal) instructs your modem to call a BBS. When the modem on the other end

answers, your modem and the other modem begin a conversation. If your modem has a speaker, you will hear a high-pitched noise as this begins to happen. The modem on the other end will then interrogate your modem to find out the speed that it is operating at, and will adjust itself accordingly. Once this has been done, the two modems will connect, and your carrier detect light will go on. At that point, the computer on the other end will begin to execute whatever board software it is running, and will transmit information to your system, which will be displayed on your screen.

While different systems vary, you will usually be told the name of the system you have reached first. Then, you will be asked for your name and password. After you have entered them correctly, you will be welcomed to the system and be presented with any new important information. Again, systems vary in the material presented and the order in which it is presented. You will usually be asked if you wish to review the mail to determine if you have any new, unread mail. You'll quickly learn how the systems are set up and become accustomed to how they work.

Once you make your first call, it will be quite easy to make the second; it gets easier as you learn how the various systems work.

Once you're ready to make your first call, it's usually a good idea to select several systems that you wish to call, as systems are often busy. Many popular communications packages offer a circular autodialer which will dial a list of numbers until one of them answers; this is very popular and is most useful.

Once your system connects with another system, there will usually be some sort of audio signal to alert you to this. Some communications software packages have an elaborate alarm; others have a simple beep. In any event, once you have connected, your modem's carrier detect light will go on.

If all has gone well, you should now see an indication that you are connected to another system because the name of the system will be displayed on your screen, along with a request for a user name. Should you see nothing on your screen (but the carrier detect light is lit), it is often a good idea to wait a few seconds and then press the return key as some systems require you to press the return key so they can determine the

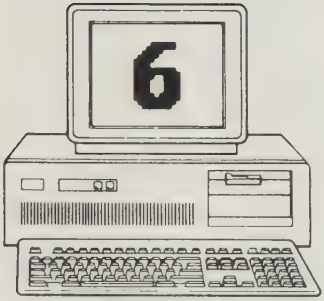
speed of your modem. Most detect the speed without any intervention on your part, but a few require you to press the return key.

Should you get garbage on your screen at this point, there are three possible explanations. One is that there is "line noise" present. Line noise is caused by a problem in the telephone line somewhere between your computer and the other computer. It is more frequent during inclement weather and wind, though it is sometimes caused by a bad telephone jack. Line noise usually clears up if you simply hang up and call back.

A second possible problem could be a difference in speed. While modems are supposed to "fall back" to the next slower speed if they can not make a connection at the speed to which they are set, some brands have a problem doing this. The way to remedy this is to reset your modem to a slower speed and call back.

A third possible problem could be in the way the modem is set to handle data. Most communications systems operate at 8N1, which means that the data is 8 bits long, has no parity checking, and has 1 stop bit. There are a variety of ways this can be set, and your modem must be set-up exactly like the modem on the other end. Fortunately, most boards run on the 8N1 standard, and those that do not usually tell you that in any list that they appear on.

In the next chapter, the specific commands for the most popular boards will be covered in detail. However, there is one very basic rule: follow instructions. The computer will usually let you know what it wants from you. If it asks for your name, answer your name, etc. The next chapter will cover step by step details for PCBoard and RBSS, as they are the most common boards and the ones that you are most likely to encounter. You will sometimes encounter custom software that is unlike any you have ever seen. When this happens, remember the basic rule: follow instructions.



The Systems

This chapter covers a number of the most popular systems that you are likely to encounter. Of course, you may encounter systems which are not covered here. But these are the most popular, and, as you will discover, they are pretty much alike. Boards vary widely with respect to content, but there aren't too many deviations in the way that they operate.

If you're fortunate, your modem will come with a *CompuServe* subscription. Many modems come with a free initial subscription, and it's a very nice thing to have. If your modem did not come with a *CompuServe* subscription, there are packages available that have everything you need to begin using *CompuServe*. These packages are often offered at a discount price. My personal modem is one of those $70.00 specials that mail order houses often have. In the two years since I have owned it I have used it for a minimum of three hours a day, every day and have yet to have a problem with it. And, as a bonus, it came with free software AND a $25.00 *CompuServe* credit. Considering what the *CompuServe* subscription kit will cost if you have to buy it, it is something to look at when shopping for modems.

CompuServe is the largest public data network in the world. *CompuServe* offers detailed information on everything from coffee beans to new cars. You can purchase items on-line, talk to others in the CB Simulator, play electronic games, and upload or download lots of software. *CompuServe* is unparalleled; there simply is no other system with as many users, as many special interests, as many files, as much software, or as many on-line activities.

CompuServe is not free. You are charged by the minute for on-line time. In addition, special services (and there are numerous services; want to read 100 magazine articles about harmonicas? No problem whatsoever) sometimes have a premium charge in addition to the on-line time charge.

CompuServe is not the place to engage in illegal activities either. They won't put up with it. *CompuServe* doesn't put up with handles either; you have to give a valid credit card number in advance, which makes using handles impossible. *CompuServe* isn't the Anarchist's Board. But it is very useful. It is useful because it has the largest file areas in the world. If there exists a BBS list for your area, it is most likely on *CompuServe*. And, since you can search the files by description, if you wanted to find a list of Nevada BBS's, in a matter of seconds *CompuServe* would list the available files that contained the word Nevada (or Nevada and BBS, if you preferred) in the description.

CompuServe also has a worldwide electronic mail system. Again, *CompuServe* doesn't allow illegal activities. *CompuServe* is fully protected by the Electronic Communications Security Act (more about this later); most local boards are not. Additionally, *CompuServe* has a special interest forum for everyone. Finally, *CompuServe* has CB Simulator, which has multiple channels and lets you talk to users all over the world.

CompuServe is lots of fun. It's also very useful and is used by many of the nation's largest companies, students, and others who need oodles of information quickly. I personally like *CompuServe* a lot, and I highly recommend it. But it's not free, and it can be so much fun (I personally like the CB Simulator, which has numerous adult channels and allows you to communicate simultaneously with users from around the world... you'll usually see someone close to home on one of the channels

too) that you can find yourself surprised by the bill. They're up front about their billing policy and tell you exactly what each minute costs, but it is still possible to "lose track of time."

You can't just "log-on" *CompuServe.* You've got to have a user number and password first. When you purchase your subscription kit, you get your user number, password, and a very handsome book that tells you all about using *CompuServe.* Because of this, the specific commands that are needed for *CompuServe* won't be repeated here.

There are a number of local systems that are free, and there are also a number of local systems that charge a nominal fee. As was previously mentioned, there is usually a list, compiled by a not for profit user group, of all of the systems in a given neighborhood. In the Atlanta area, for example, there are 150 listed bulletin boards, and the list is updated and published monthly. There are a number of such local lists, and there are also several US lists (again, if you can't find one, check *CompuServe.*) The secret is to find just one board; from there you'll either find a list, or a SysOp that will direct you to other boards.

Most local lists will not publish the phone numbers of "pirate boards." Pirate boards are boards that are known to participate in, or allow its users to participate in, illegal activities, such as the posting of credit card numbers, long distance access codes, or illegally copied software. When you hear someone talk about computer crime over the BBS network, they're usually talking about pirate boards. Pirate boards are difficult to find as they are not usually on the local BBS list and most people don't know of them. Discrete questions or trial and error are usually the best way to discover these boards. There are also programs, specifically *AIO,* available for download that will dial every number in a given area and make a list of every modem encountered.

There are two board packages that you are likely to encounter. One is PCBoard, and the other is RBBS. While there are mixed opinions about the value of these systems (everyone has their own opinion about the best sort of software and which features are most important), these are the two systems that you are most likely to encounter. The following few paragraphs explain, step by step, how to use these two systems. There may

well be some variations; at the time of publication of this book PCBoard was introducing version 14.0, and RBBS was at least to version 10.0, and, adding to the variations, there are possibilities for SysOp customization. Nonetheless, the following instructions should prove helpful.

When your modem connects with another computer, your software will most likely do something to let you know that this has occurred (both *ProComm* from Data Storm Technologies and *SmartCom*, from Hayes, feature an alarm signal that beeps at you to let you know that you're connected). The host computer will then adjust to your modem speed (you may have to hit return for it to tell what your modem speed is... if it asks you to press return or nothing happens within thirty seconds or so, pressing return is a very good idea).

If you have reached a PCBoard system, the word "PCBoard" will appear, along with the version number of the particular program that SysOp is running, as well as the date and some descriptive text that the SysOp has elected to put in as an introduction.

At that point, you will be asked "Want color graphics (CR=No)?" If you type "y" and press return, you will be delivered color graphics screens, which are very pretty and quite helpful. However, if you press "y" and your computer can't display color graphics, you will get lots of meaningless garbage all over your screen, and will have a very hard time figuring out what is being transmitted. Obviously, if you have a monochrome monitor, you'll want to type "n," in which case, you'll just get plain text. If you type "yq" or "nq," you will bypass the opening introduction ("q" in this instance stands for "quick"). This is so people who call the system every day (or several times every day) do not have to read the introduction screen each and every time they log on. Of course, if you are calling the system for the first time, you'll want to carefully read the introduction screen for important information and instructions.

After you have read the introduction screen, you will see the next question, which will be "What is your first name?" At that point, you will want to enter your first name (if you have chosen to use a handle or an assumed name, then you would

enter that). The next question will be "What is your last name?" Again, enter your last name (or assumed last name) and press return.

The system will then say "Checking user file, please wait..." If you have logged-on before, the next line will be "Please enter your password," in which case you would enter your password and press return.

If you have not logged-on to that particular system before, you will see "(YOUR NAME) not found. [R]e-enter name or [C]ontinue?" If you entered your name incorrectly, you would press "R" and press return, which would give you another chance to enter it correctly. If it did not find your name because you are a new user (as is the case when you first log-on to a board), you press "C" and press return.

After you press "C" you will be presented with a screen which you will never, ever see again. It generally has some rules of the board or some other information. It is displayed once and only once, and that is the first time that someone logs onto the system. Since you will never see it again, it is generally a pretty good idea to read it carefully.

Following that screen (along the way, you may see a prompt that reads "More? (y/n/ns)" which means that the computer has stopped sending the message because it will not all fit on your screen at once, and that you should indicate whether you want to read more of it, not read more of it, or read it without further stops), you will be asked the question "Want to register ?" If you type "n" for no at this point, you will be instantly logged-out and can never log-on the system under that name again as you will be "locked out" of the system, meaning that your name has been marked as someone to never allow on the system again, even to explain that you accidentally hit the wrong key. So, if you'd like to use the system, you will have to type a "y" at this point.

After you do that, you will be asked several questions, as follows: First, you will be asked for your city and state. Most people actually give the city and state they're calling from in response to this question, but some boards put funny messages in this area instead. Generally, it's a pretty good idea to answer this question truthfully. Next, you will be asked for your pass-

word. This can be any word, and will assure that you, and only you, log-on to the system under your name. You should choose your password carefully, and memorize it. It's generally a good idea to use a different password on every board, as the SysOp can see your password, and, if he is a truly nasty person, log-on as you on other boards on which you use the same password (it has been known to happen). Your password will not print, but will show as dots for the sake of security.

Next, you will be asked to "Reenter password for verification," to be certain that you actually typed what you think you typed. Next you will be asked for "Business or Data phone, (13 digits max)." You may want to actually put your work number there. Then again, you may want to put a number of a pay phone or huge corporation there instead. You will next be asked for your "Home or Voice phone, 13 digits max)." Some SysOps will call this number to verify that it is real. If you are going to do anything illegal or anything that you would not want linked to you, you will obviously not use your real phone number here. I normally use the number of a fax machine (which sounds like a modem but will not connect to a computer if called) and have had much luck that way, as the SysOps assume they called while the modem was hooked-up to the phone. I've found this to be a very effective alternative to leaving a real phone number, even on boards that call to verify their users.

You will then be asked to enter your "Default Protocol." What this means is that the computer wants to know how you will be downloading files. Your choices are X-Modem, CRX X-Modem, Y-Modem, ASCII, or None. X-modem and CRC X-Modem work by checking each block of information that is sent along with a check digit that is also sent, to be sure that your computer received what the other computer sent. If it did, the next block is transmitted. If it didn't, the block is sent again. X-modem sends and checks 1 block at a time. Y-Modem works just like X-Modem, except that it sends 1000 blocks, then checks to be certain that you received what was sent. ASCII means that there is no error checking. None means that you will be asked which protocol you wish to use each time you upload or download a file. There are, of course, other transfer protocols, but these are the most popular (X-Modem is the most widely used) and are the ones supported by most

PCBoard operators. If there are other transfer protocols available, you will be informed of that at this point.

Now, having answered these questions, you will be told "Registration information saved" and you will now see what you will see each time you log-on.

You will next see some statistics about yourself, including the number of times you have called the system, your security level, the number of files that you have uploaded, the number of files that you have downloaded, and similar information. You will also see something called a "caller number" which tells you how many calls the system has received since it has started operation. This number may seem surprisingly large to you.

After seeing these statistics, you will be asked "Check your mail today, (Your Name)?" If you have called earlier the same day, it will ask if you want to check your mail again. In any event, if you answer "y" the computer will tell you the message numbers of any new mail that has been left for you, the message numbers of any mail you left, and the message numbers of mail left for you which you already read. It won't show you what the mail is, just the message numbers at this point.

You will next see a menu of all of the various commands available on the system. As you get advanced, you will probably type "X" to turn the menu off, but it is very helpful when you are learning because it shows all the available commands.

As you were reading the new user information, you probably noticed that you were requested to fill out a "Script Questionnaire." Unlike the questions that were asked when you registered, which are standard, the script questions are unique to each board, as they are written by the SysOp. You will usually not be allowed to do very much or use the system for very long until you fill out the script. To do this, you'll want to type an "S" and when it asks if you want to fill out the script, a "Y" for yes. At that point, simply answer the questions (you may or may not want to answer them truthfully, depending upon your intentions). You will notice that most of the questions involve address, occupation, and such, although some boards have questions relating to sexual practices and other outlandish things. One board that I frequent changes the

script every couple of months and publishes the funniest answers on the board on a routine basis. Only the SysOp can read these answers, by the way.

That is basically how you log-on to PCBoard. Beyond this, you simply follow the instructions that are presented to you, and a menu is always available. Two important points though. If you try to do something and it tells you that you are not authorized to do it, there is no point in trying it again. Repeatedly trying to do something which you are not allowed to do will get you locked out of the system (on the third attempt, to be precise). Also, always leave the system by typing the "G" command. Just hanging up will surely make the SysOp very angry, as the board does not properly recycle and reset itself when you do that. You'll not have a happy SysOp if you leave by just hanging up.

The RBBS system is similar, though a bit different. The following log-on sequence is from version 17, and, as with PCBoard, will vary slightly with different versions and different SysOps. First, you will see "WELCOME TO (System Name)." Notice that there is no indication that you are on a PCBoard System; PCBoard systems, unless they are illegally altered by the SysOp, always tell you that they are a PCBoard system. Unless you see that (or an indication that you are on some other sort of system, such as Wildcat!), you are probably on an RBBS system. Next, you will be asked "What is your FIRST Name?" Again, how you decide to answer that will depend upon what you intend to do on the system. Next, you will be asked "What is your LAST name?" You will then be told "Checking Users..."

If it is your first time on the system, you will be told "Name not found" and asked "Are you 'Your Name' ([Y],N)?" If you answer "Y" for yes, as you will if it is your first time on the system, you will see "What is your CITY and STATE?" Again, how you answer that is up to you, but your response may well affect whether you get access or not.

After answering those questions, you will receive a welcome message telling you the system name and perhaps something about the system. You will then be shown your name and city and asked whether you wish to "C)hange name/address, D)isconnect, [R]egister?" Again, you'll probably want to register, since if you disconnect you won't be allowed to call the

system again. As with PCBoard, you'll then be asked for your secret password, which will not print out but will echo as dots. You will then be asked if your terminal can display lower case letters; answer appropriately here (a note, by the way: don't type in all caps; it will annoy the other users and subject you to much abuse. It's like being screamed at, and it won't win you any friends).

You will then be asked whether you want graphics (RBBS remembers whether you want graphics and doesn't ask you again; PCBoard asks you each time you log-on). Your choices are None, ASCII, or Color. You will also be asked if you want colorized prompts. Again, if you can display color, they're very neat; if not, they're quite a bother. As with PCBoard, you'll be asked to choose a transfer protocol. They're generally the same on all boards (though some boards support more different kinds of transfer protocol than do others). Finally, you'll be asked if you want "turbo keys." Turbo keys allow you to enter your command without having to press return after them. They simply make things a bit quicker.

At that point, you'll be asked a few questions that vary from board to board (much like the PCBoard script questions). And, after that, you'll see the welcome message that you will see in the future when you log-on.

RBBS will show you any new messages for you that may have been left, as well as tell you if any new bulletins have been left. As with PCBoard, you may be required to read certain bulletins or system information. You will probably want to do this anyway. Like PCBoard, you will be shown a menu of all the things you can do on the system.

Generally, both the PCBoard and RBBS systems are divided into several different areas. First, there is the "main board," a place for leaving and reading messages, and that is where you will end up first. There, you can read messages that have been left, and you can leave messages to others.

There are also "conferences," which cater to special interests. If you type "J" and press return, you will see a list of conferences (you may not be able to join all or any of them, but you will see the list). The conferences are also message areas. Many boards have "adult" conferences and some have private

conferences. The SysOp more carefully monitors who is given access to the conferences, and the speech is often freer since not everyone who calls in is allowed to join a conference.

There are also "file" areas, which are accessed by typing "F" (again, on either RBBS or PCBoard). The file areas are where others have uploaded programs or important information which you can download and use. Many systems don't let new users download information. Many also require that you upload a certain number of files for each one that you download. Again, this is all made clear in the board's bulletins, which you should read so that you are informed about such matters.

You can also leave a comment for the SysOp, and you can "page" the SysOp to "chat" on line (that is, directly type the message to the SysOp instead of leaving a message).

Newer versions of PCBoard support "doors," which are programs that you can run, often games.

Both PCBoard and RBBS are very friendly, and you'll quickly get the hang of using them. The beauty of both systems is that they vary only slightly across the different systems they are run on, so you can concentrate on using the board instead of looking up the commands.

It should be noted here that there are lots of other good bulletin board programs out there. The amount of space dedicated to explaining PCBoard and RBBS is not an endorsement of these systems, nor does it imply that the other systems are not good. PCBoard and RBBS are the most popular systems, and it is a good idea to have an understanding of how each of these systems works. As always, follow the instructions.

You may ask yourself, "Have 45,000 people really called this system?" The answer, quite simply, is yes, they have. The better BBS's tend to be very busy. A circular autodialer (one that will dial two or three or ten different numbers over and over until it connects to one of them) is very handy. You'll often encounter a busy signal; don't let this discourage you... it's a perfect opportunity to explore other systems.

A point about etiquette is in order here. Go with the theme of the board, but remember that many of the people know each

other and you are a stranger. Tread softly at first. Under my handle, I'm a very active modem user in my community, and most everyone knows me. I can advocate anything and not be considered a radical. I can call people names, make fun of them, and be critical about their opinions. But, if a new user tries it, they'll find themselves kicked off of the board and learn that other SysOps hear of their antics rather quickly.

Even on adult boards with obvious sexual invitations, it ought to be remembered that these people have known each other for years; new users who are blatantly sexual, abrasive, or difficult are rarely well received. Get your feet wet before you jump right into the main stream of conversation. A simple "Hi, I'm new to BBSing and this board" will quickly bring you a multitude of responses; BBSers are very open to newcomers.

When I first started BBSing I assumed that because this lady was making blatant sexual innuendos and issuing invitations on the board it would be okay to issue an invitation or two of my own. It wasn't too long before I found out that the guy she was making all the invitations to was her husband who called in from work frequently; he wasn't a happy camper. In sum, get a feel for the board before you stick your foot in your mouth. The inflection present in normal conversation doesn't come through in type, and things are sometimes misunderstood.

Using the Systems

Now that we have discussed how the systems work, it is time to get into the exciting part of BBSing, what the systems do and what you can do with the systems. There are a variety of things that you can do with the systems, but a few are pretty common themes.

First, the BBS provides an excellent way to meet people and make friends, especially for the shy. On a BBS you need not ever meet anyone if you don't want to. You can describe yourself as anything that you want to (a note of warning: this very often happens) and no one will be any wiser.

The BBS is a good medium for making friends for a variety of reasons. First, there is some demographic screening done, which insures at least some common ground. People who call BBS's are people who have the money to invest in a computer to use as a toy, and it is quite possible to learn a bit about them by observing the messages they post.

What the BBS offers over other forms of meeting people is that you can learn something about them before you even call to talk to them.

BBS systems have a definite advantage over singles bars and other alternatives. Certain boards have a sexual flavor that lend themselves to meeting people. Other boards are more family oriented, and some even have monthly picnics. One of the things that makes them attractive is that very shy people feel more at ease using them. No one hears your voice unless you choose to give them your phone number, and it's quite easy to ignore messages if you choose to. Additionally, there exists private mail (or E-Mail, as it is routinely called) where more personal discussions can take place. One board format, Oracom, forces each user to fill out a questionnaire (the questions can be very sexually explicit, though this is strictly up to the SysOp), which can then be read by the other users. This allows you to browse the questionnaires of the other users according to the specific criteria you choose, so you can decide who you want to communicate with. Script questionnaires on most boards are read only by the SysOp, so you don't have to worry as much about leaving personal information.

While meeting people from BBS systems is not something that everyone might want to do, it is quite a bit of fun and can be quite effective.

While the BBS offers lots of fun, it also offers opportunities that are not offered elsewhere. The BBS offers a unique forum in which to raise hell without running as high a risk of getting caught as with other forums.

One of the great benefits of BBSing is realized by those who wish to engage in subversive speech. As most people know, there is a constitutional right to say anything you wish to say. As most people also know, there are certain things that one ought not say unless they wish to go to jail, or unless they wish to find their names on certain lists.

For example, you might be a Libertarian, Communist, or member of some other group that is not particularly popular with law enforcement groups. On the grass roots level, it can be difficult to arrange meetings and distribute literature to the membership. The BBS offers a very unique solution to these sorts of problems.

Rembember the basic premise of the BBS: you can do it from home under an assumed name! I have seen at least one BBS

that has a "Libertarian Conference," the purpose of which is to discuss the ideals, ideas, and purposes of Libertarianism. While this particular board lets anyone use the conference, that need not be the case. Someone known as Puppy Love frequently suggests certain activities that would get one thrown in jail were they to be mentioned on the street. Mention, for example, doing bodily harm to elected officials — even in jest — and you will no doubt find yourself thrown in jail. But the assumed name allows you to do such things.

The safety of plotting on BBS systems depends, in large part, on the care taken by the SysOp in verifying users. Certainly anyone can log-on under any name. But, unlike meetings which take place on the street, there exists no real evidence that can be used against you. "Puppy Love" is clearly a handle; who it belongs to is something that there is really no way of telling. So, when Puppy Love suggests things that involve explosives, it is most likely illegal, but virtually impossible to do anything about. If the SysOp verifies carefully, the security of the system and the safety in which you can leave messages is greatly increased.

Why would you wish to leave messages proclaiming your views on a BBS instead of the laundromat bulletin board? There are a variety of reasons. First, of course, there is really no way of catching you with the goods. The person who posts flyers runs the risk of getting caught with a hand full of flyers and a pocket full of thumb tacks, making it pretty difficult to disclaim responsibility, especially since every flyer posted is covered with fingerprints. The person who posts an electronic message from home has left no fingerprints, and hasn't walked down the street carrying all the evidence. The number of people reading the message will vary with the board. Some boards have nationwide links (meaning that mail files are transferred to a variety of boards, making the user base several hundred times larger). I've seen boards with five thousand users or more. One particular board with over five thousand users purges any user who hasn't logged-on in thirty days.

You can also selectively decide who reads your message (on most boards, at least), by sending it "group password." What "group password" means is that in order to read your message someone must enter a predetermined password at the prompt

or they can not read the message. Doing this would insure that only selected individuals could read a particular message. This is something that you really can't do with other forms of communication.

Finally, in this forum, your message won't be deleted. Lots of messages left in other forums (physical bulletin boards, for example) get ripped down or altered. Your message is safe from deletion or alteration on a BBS.

Some specific examples may well serve to illustrate just how powerful a forum this is.

Let us say, for example, that you wish to organize some sort of protest which you know will not be very popular. There are lots of causes which come to mind, from nuking killer whales to legalizing marijuana. In any event, there are several ways you could go about doing that. If you could find a newspaper to take your advertisement, you could, of course, invest a few dollars (probably in the form of a check with your name on it), fill out a form (which probably asks for your name and address) and run your advertisement. Community standards, however, will often see that your ad doesn't get run. If you look through the local paper, you will probably not see too many "legalize marijuana" ads. Of course, you could simply go to popular areas and post your message on telephone poles and such. When you're observed doing so, you'll no doubt make the local police force's list of suspected drug dealers (or psychotics, if you happen to be posting "Nuke The Killer Whales Rally" notices). However, should you decide to post your message on an electronic bulletin board service, things change quite a bit. First, there is no chance of your getting caught with the flyers. Lots and lots of people will see your message. And you expose yourself to very little danger. And it is always possible that people who read your message will print it and post it for you.

Or let's say you wish to do a little muckraking with respect to some government official you hate. Print a hundred flyers saying that a local judge has a sexual attraction for dead dogs, and he'll no doubt invest a lot of time and energy locating you and seeing that you're punished for your deeds. It might be lots and lots of fun to do, but it may also buy you lots and lots of trouble. Post it on a BBS and the odds of your being located

are much lower. Again, no fingerprints, no physical evidence, and lots and lots of people will see your message.

Subversive speech, you see, is dangerous business. While one has a right to free speech, that doesn't make it any safer. However, one can be just as effective posting messages on an electronic BBS (in some cases your message will actually reach more people, and will often reach more of the specific class of people that you wish to reach) and it is usually much safer.

BBS's also allow you to find cohorts. A local board which caters to Libertarians has some fakes, of course, as do many boards (just because you say you are male, or a Communist, or a paedophile doesn't necessarily mean that you are). But you can be reasonably certain that someone who responds to your "Let's blow away the Yuppies" with a "hell yeah!" message probably doesn't like Yuppies either. If you post a "Kill a Commie for Mommie" message and get a "drop dead, scum" message back, you've pretty much found out that the person who responded is not one of the people that you want to invite over for a group organizational meeting.

A common thing to do on BBS's is to leave your message in public (and it can and often is something outrageous, styled as a joke, but designed to gain the attention of those with feelings which are similar to yours) and then respond to any responses in private, leaving more details than you would in public mail.

While you could certainly print flyers listing your address and announcing a meeting for your group, that is something that you might not want to do. The BBS, on the other hand, allows you to decide to whom you will give your address or your phone number. This could be especially useful if you are organizing a particularly unpopular (or patently unlawful) sort of group. It would also be quite valuable to protecting your career if you are in the sort of profession that dictates what its members should do in their off time. You may think it just dandy to organize a local Nazi youth troop, but your employer might feel a bit differently. Likewise, you might think it okay to get a bunch of the guys together and talk about bombing the local IRS service center, but that's certainly not the sort of thing you'll want to indiscriminately pass out invitations to.

The BBS offers you the opportunity to query into people's beliefs (from the safety of your living room), decide if they merit a phone call (which can be made from a pay phone), and then decide if they merit inclusion in your group. While this is certainly not failproof, it is quite a bit safer than other methods of finding cohorts. You also have the advantage of not having to deal with folks who strongly disagree with your views. People might get angry and post profane messages, but they can't pelt you with bottles through the telephone line.

Beyond finding cohorts, there exist out and out criminal activities that can be engaged in electronically. They are patently illegal, and you're not advised to try them, but as this is a book designed to inform, they are covered here for your information.

Conspiracy is much easier through the BBS. And it can take place in a number of ways. While several specific opportunities are discussed a bit later, the general principles are the same.

You could share details for a conspiracy over the phone line. Of course, anyone in the room would also be able to hear exactly what you were saying, as well as anyone who was listening at any point on your phone line. Data transmissions could, of course, be captured on tape and recreated if someone tapped your phone line, but someone listening on an extension would quickly hang up when they heard what the screech of data being transmitted sounded like.

There are several ways to further secure your communications if you are conspiring to do something which could get you into serious trouble. There are a number of data encryption products, many of them available free. Several good commercial products also exist. Most bulletin board services which support file uploads and downloads have at least one program for download which encrypts data to a very high standard. As long as you post your message in receiver only, the SysOp will probably not be too upset. It would probably anger the SysOp and system users if you post a totally meaningless message in public mail. There is also the age old technique of posting page and word numbers from a book that each person has and then using that book on the other end to decrypt the message, writing down the word that appears on that page and in that sequence to form the message. While these techniques

could, of course, be used by mail or phone, again it is important to point out just how secure a BBS system can be. You can call a BBS from any location that has a telephone (including pay telephones if you have a modem with acoustical cups which cover the telephone handset to transmit and receive the data).

Conspiracy is much safer when there is no physical evidence. It could, of course, with enough time and effort be proven that someone called and left a message on a board from a given phone at a given time (very difficult indeed unless you call long distance from your own phone, which isn't recommended). Proving, however, that you were the caller is quite simply impossible. Anyone could guess your password (if you choose your password carefully it's virtually impossible to guess it, but that isn't something that you'd want to bring up if you were ever accused of posting a message that you don't want to take credit for). And someone else could be using the same handle on other boards.

If you've ever seen *Mission Impossible*, one of my favorite shows, you've seen the elaborate techniques that are employed to see that details of the mission are not transmitted to unauthorized parties: codes and countercodes are required to pick up the details, and definitive identification is required to view these details. The BBS offers you security that is as good without having to use blind drops and risk your message falling into the wrong hands. An encoded message could be sent *group password* so that only those who know the code can read it, and would then have to be decoded with another code. The odds of guessing an eight digit password consisting of the letters A-Z and the numbers 0-9 are 1 in 1,063,900,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000, which makes it quite unlikely that anyone except your intended recipient will be able to read or decipher your message. Most systems also allow you to use punctuation and special symbols in passwords, which makes it even more unlikely that anyone would be able to guess the code. Of course, the SysOp and anyone granted SysOp privileges can read anything on the system regardless of the security that you put on the message, but that does not mean they will be able to decipher your message if you post it in a coded form.

Whatever you're conspiring to do, the BBS allows you a somewhat safe medium for passing along information about the conspiracy itself, as well as providing a nice place to find folks of a similar mindset.

Beyond conspiracy, however, there is more direct crime which is made easier by the BBS. One of those crimes is gambling, a crime which the BBS lends itself to.

Unless you're fortunate enough to live in Nevada, placing a bet on a sporting event requires your picking up the phone and calling your local bookmaker. While your friendly local bookmaker may not complain, if he's still taking bets by phone, he's missed the high technology boat. The BBS offers some pretty distinct advantages for someone who endeavors to run an illegal gambling operation (and remember, this is just an observation and not a recommendation).

First, of course, one need not be home in order to operate the BBS. A BBS system requires a telephone jack and an electrical outlet. This means, quite simply, that it can be set up anywhere (the SysOp can call into the BBS from a remote location just like any other user, though once logged-on he can do almost anything that he would be able to do if he were actually in the same room with the BBS). What that means is that one need not have a BBS which is used for violating the law in one's own home. Nor does one have to answer the phone, allowing any interested party to tape record their voice.

A number of options present themselves with this new unique medium. A gambler could, for example, call in his bets at any time of the day or night, something that would infuriate the average bookmaker if he were actually taking phone calls.

The computer command "Format C:" erases all physical evidence of any wrongdoing, and, with a bit of trial and error, can be executed by the SysOp from a remote location. Instead of having notebooks containing all the physical evidence of an illegal operation, the person running an electronic gambling service has no physical evidence, assuming, of course, that he was bright enough to insure that a system of codes is established so that messages are a bit more discreet than "Put $50 on Rawhide in the seventh."

The BBS also provides a unique opportunity most bookmakers do not have: the fabulous numbers game. Numbers games have a variety of different forms, but among the most common is to pick some stock, say IBM, for example, and pick the last two digits of the closing sales price. The winner gets something like ten to one, while anyone who did not pick the right numbers gets nothing. At a dollar a pop, someone can make quite a bit of money at this sort of thing.

The problem with normal numbers games (or at least the weakness as far as getting caught goes) is that there exist physical slips of paper for folks to record their choices on. Once again, the BBS does away with that evidence. Posting a message saying "34" is not only quite uninteresting, but it doesn't prove a whole lot.

One might say, at this point, that this requires a lot of faith in the gambler to pay debts incurred. But, of course, this particular method of running a gambling operation requires no more trust than taking bets over the phone. What it does do is place a bit of distance between the person running the operation and the evidence, and it eliminates a good deal of physical evidence by its very operation.

Recently, a story hit the national press about a prostitution service with nationwide contacts and a catalog, indexed by cities, from which a prospective customer could choose his "date." Had they used a BBS instead of telephone lines (let's face it, this was not a cheap operation, and the folks who spent the sort of money involved probably had home computers to start with), the folks involved would probably still be free instead of awaiting trial. Once again, the electronic BBS does not invent a new crime, but certainly makes an old one much safer to engage in.

I've actually seen BBS's that tread the fine line between legality and illegality with regard to "dating services." Certain BBS's charge pretty exorbitant fees for male users while allowing females to utilize the service for free. One such board makes no bones about why it exists: to match folks looking for a sexual encounter. Again, given certain precautions and following certain common sense rules, prostitution becomes a much easier business to manage utilizing the BBS.

Certain systems allow some variation of a matchmaking utility which lets you search the user database for people who have a certain set of answers to questions set up by the SysOp. This is somewhat common on lots of boards and, depending upon the whim of the SysOp, can contain quite explicit questions. While this is very useful for selecting a date, it could also prove exceptionally useful for selecting an "escort." Availability, preferences, taboos, etc., can all be utilized in searching the database for a night's worth of excitement. And, unlike the catalogs which were confiscated by law enforcement officials recently, magnetic media allows all information to disappear, as if by magic, with a keystroke or two.

Traditional call girl operations have a problem or two. First, of course, is the fact that someone has to physically be present to answer the phone. Even if the set up involves forwarding calls from one phone to another across town, someone still has to be around to answer the phone. Like gambling, prostitution contacts can be made much easier via BBS. And, like gambling, there is no need to be physically near the system.

Another crime to be evaluated that is facilitated by BBS is dope dealing. Quite naturally, we're not talking about crack or other inexpensive substances but rather the recreational drugs that have a more affluent user base.

Of course it is impossible to deliver the goods via an electronic medium. At some point, there has to be an exchange of goods for money. While this remains a risk, the electronic BBS allows you to reduce some of this risk.

As in other crimes, the BBS allows you to carefully screen participants. It allows you, as well, to keep evidence in some remote location where it is much more difficult to tie to you, and can be more easily destroyed.

The BBS also allows you to set up locations for meetings and drops, something that must be done but which remains particularly dangerous. With the BBS, instead of calling from some telephone where your voice can be recorded, it is possible to call from a pay phone and leave a message which could still be intercepted, but which could not be positively attributed to you. While this does not make the actual transfer safer, it does make conspiring to do it considerably safer.

The BBS found infamy, unfortunately, and has been a target of legislation and concern in its infancy due to its utility in transferring data. One can, of course, transfer all sorts of data. The pioneers of electronic criminal activity found the BBS exceptionally useful for the transfer of credit card numbers, long distance codes, and other related data, and certain boards — not nearly as many as the paranoid law enforcement and corporate community would have us believe — were used for just that purpose.

This worked rather simply then, and it would, no doubt, work just as well today. One could very easily set-up a nationwide network for the dissemination of such information.

To a thief, a credit card number is just as valuable as the card itself. Using blind drops, one could order thousands of dollars worth of merchandise (the sorts one sees on television and in catalogs, which range from exercise equipment to some very nice computer equipment) and have it on its way before the card was even reported stolen. It stands to reason that a savvy thief could make money even more quickly by not ordering anything at all but rather selling the legitimate credit card number and expiration date to someone else to either make a counterfeit card or use the card number to order goods.

Obviously, speed and secrecy are of the essence in this sort of transaction. One could very simply, and very cheaply, configure a bulletin board system to perform this sort of transaction. Again, security would be important, and again, the fact that the BBS can be set up almost anywhere and is accessible from any phone make for a bit of comfort. Using a BBS, fresh card numbers could be posted daily, used by a variety of people (remembering that a credit card is only good until it is reported stolen, and time is against you), and abandoned for a fresh number from the list the next day. The beauty, of course, is that these numbers could be made available around the world on a regular basis without a scrap of physical evidence or a single word spoken.

A smaller network is even easier to manage. Two or three people working together could use any BBS to share stolen credit card numbers, and, as long as there was some reasonable cover (for example: "Ran your program; it hung at memory

addresses 4403:0003 9903:0029 2911:0002 2209:3432 and 5069:3302; I think you ought to adjust the stack size.") to explain why you were sending numbers back and forth, the SysOp would be none the wiser. Assuming that you haven't used your real names, the only person with incriminating data in his possession would be the SysOp of the system you were using, and he wouldn't have any information to provide to the appropriate authorities anyway.

Once upon a time, "black boxes" and "blue boxes," which generated tones with which a knowledgeable person could gain free long distance service, were a major source of irritation for the phone company. Rumor has it that certain groups of people, at about the same time, maintained lists of long distance access codes and the telephone credit card numbers of major corporations. Certain boards — now driven deep underground or abandoned as their owners entered adulthood — had nationwide fame (or infamy, as the case may be) for such activity.

Long distance codes and telephone credit card numbers can, of course, be posted just like other credit card numbers can be posted.

The anarchist, concerned not with profit but anarchy, can find the BBS even more useful in these respects. The thief would want to guard the numbers and distribute them only to paying customers or brother thieves with whom some arrangement had been entered. The anarchist, on the other hand, would not care how many people had the information; for his purposes, the more the better. Connected systems, some of which span from coast to coast, make it very easy to distribute credit card numbers to thousands of people all over the country. Of course, many people wouldn't use this information, but I certainly wouldn't want my numbers so distributed.

Of course, other criminal activities are possible and are limited only by your imagination.

A final very useful thing about electronic bulletin boards is the amount of free software available on them. Generally, with respect to software, there are five distinct kinds of boards. First, there are boards that allow no uploading or downloading of any software whatsoever. These boards exist for conver-

sation (or some other purpose, like the vices discussed earlier) and don't want to support software. Second, there are boards that exist for the illegal distribution of commercial, copyrighted software. These boards are commonly referred to as "pirate" boards, and are among the most difficult boards to find, as well as the most notorious boards. "Pirate" boards often have lists of long distance access codes, credit card numbers, and other such illegal things. Third, there are boards that allow the unlimited uploading and downloading of public domain, freeware, and shareware. These boards generally will not tolerate the uploading of copyrighted software. Fourth, there are boards that allow the downloading of software only by "supporting users." Supporting users are the folks who send the SysOp some requested donation to help defer the costs incurred in running a BBS. Finally, there are a few boards that charge a fee for every program downloaded, sometimes approaching the commercial value of the software. Again, how the download policy works depends exclusively upon the SysOp's rules.

Free software has recently come under a lot of fire with the introduction of a virus into nationwide commuications networks. The next chapter deals with problems that the user is likely to experience, and viruses and Trojan horses are covered in detail there.

Free software is often an exception to the "you get what you pay for" rule of life. Some of the best software that I have ever encountered has not cost me a dime, and free software has, in many cases, set conventions which are now followed by the entire computer industry. Several file transfer protocalls are now standard, allowing any two computers to transfer data back and forth, and both are available exclusively in the public domain.

Name a commercial program — any commercial program — and there is available through freeware, shareware, or public domain software a program which duplicates its look, feel, and functions exactly. And, most shareware is available with a typeset manual and unlimited user support for an extra fee. There simply is not a commercial product available which does not have a duplicate available for a drastically lower price, if

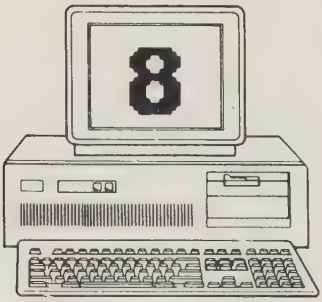
not free. Of course, to avoid copyright and trade secret infringement, there have to be some differences in the programs.

Some people may well need to pay for commercial software, but there is a great deal of free and inexpensive (and, when you download a shareware program, you are obligated to pay the author for it if you continue to use it, but there's no way to insure that you do so) programs available which will fill every need. I know of one board with in excess of 11,000 programs available for download.

There are, of course, numerous other uses for BBS's, but this chapter has attempted to cover some of the most frequent and most valuable of them.

How you will use the systems, of course will depend upon a number of things. One of the most important is the attitude of the SysOp. If the SysOp has a bulletin listing credit card numbers for the fifty largest US corporations and maintains a file library consisting exclusively of illegally copied software, it's a good bet that you can do anything that you want to on the system. If, however, the introduction screen contains a Gospel verse, you can bet that illegal activity will be frowned upon and attempting to set up an information network for prostitutes to find out where to meet their johns will probably be frowned upon.

In sum, there are a variety of different systems with a variety of different ground rules. Given a bit of ingenuity, however, you should be able to find the one that meets your needs. If, however, you can't, you might be inclined to get into the really fun part of BBSing, owning your own system, which is discussed in a later chapter.



Potential Problems

There exist several potential problems that you may encounter, and it is the object of this chapter to take a look at these problems, their origin, their consequences, and how to avoid them in the first place.

A major problem could be in finding systems, at least in some areas. Where you live will determine how much this problem troubles you, if it exists at all. Metropolitan areas normally have an abundance of BBS systems, and some local group is usually kind enough to publish a list of them. There are also several national lists of BBS's available. *Computer Shopper* has a list of BBS's in each issue. *CompuServe* also has a list for most metropolitan areas on its public access area; though that depends upon how frequently someone posts a new copy.

There exist several options available if none of these seem to work for you. If you absolutely can not find a system in *Computer Shopper's* list, and *CompuServe* doesn't have a list posted for your area, there are other options available for finding systems. Bear in mind, however, that there are certain areas that simply do not have any BBS's in the local calling

zone, and if you happen to live in one of these areas, the ideas for finding bulletin boards just aren't going to make much difference.

One option is to dial numbers at random and hope to hit a BBS system. This, of course, takes a considerable amount of time. *AIO*, is a program which is available as freeware and has a sequential number dialer. What this means is that it will dial every number in an exchange and will make a list of numbers answered by a modem. What those modems are connected to will, of course, vary. You may find some modems that are not connected to bulletin boards, as lots of businesses use modems for a variety of uses. However, since your telephone normally isn't doing anything while you sleep at night, this is often a productive time for finding BBS's (and is especially useful for finding pirate boards).

Another option which might work for you is to take a field trip to a local college. Lots of wonderful things with respect to computers had their origins at colleges, and bulletin boards are no exception. A field trip to a local college might net you the number of a bulletin board or two. Remember, the virus, that dreaded thing which has the computer industry scared out of its wits, had its genesis in a college environment. The hacker also began in the college environment. If you can't find a system in your area, taking a field trip to a local college is perhaps an excellent idea.

Another way that is often useful to find local systems concerns our friend, *CompuServe* again. *CompuServe* users all have modems. And most call other systems as well. You might find that posting a message in CB Simulator (a fun, fun place that allows you to interactively chat with users all over the world) will bring an immediate response. CB Simulator has proven to be far more effective than leaving messages in mail. If someone doesn't have an immediate answer, chances are good that they'll find something for you and leave you a message a bit later.

A final alternative that may prove useful to you if none of the above prove successful is posting a "help, help" message on a board in another city. Someone may have a list that you have not stumbled across, or may have personal knowledge of a

board in your particular area. Once you have found your first board, the others should be relatively easy to find.

Certain other challenges may arise. One of these involves the legality, or lack thereof, of certain activities.

Some of the activities discussed earlier are patently unlawful. Using a BBS to set up a prostitution service is patently illegal and would, of course, result in your getting in serious trouble if caught. Using a BBS to set up a meeting of a paramilitary group for the purpose of bombing the local abortion clinic would undoubtedly be illegal as well.

As was discussed earlier, there exist a number of ways to avoid having your activities traced back to you. One can always use a handle (George Smith, for example, doesn't sound like a handle as it is really and truly someone's real name), and always post bogus information with regard to address and telephone number, and keep the SysOp in the dark about one's real identity.

Hacking is another thing that is lots and lots of fun but which can get you into serious trouble if you are caught. There is now a tough new federal law which makes it illegal to break into or attempt to break into certain computer systems (though most bulletin board systems don't qualify). Hacking is something which has begun to concern the government, and is also something which has been the subject of recent federal, state, and local legislation. While the majority of the laws are intended to protect commercial data bases (the federal law even has an exemption for certain bulletin board systems), some may well apply to private bulletin board systems.

There is not a lot of reason for someone to hack their way into a BBS; most encourage new users by posting their number on a variety of other boards and including it on lists. While it might be conceivable for someone to break into a BBS, most modern software has a number of checks to prevent this sort of thing. It is usually possible to get in just by asking.

Hacking does pose a problem in that it is calling attention to BBS's. While this has caused some folks to begin using the medium who would not otherwise have ever learned about it, it has also caused certain law enforcement groups to begin taking a close look at BBS's.

This attention could well cause the next challenge: law enforcement monitoring. It is indeed possible to monitor calls to BBS's in much the same way that one would monitor calls to any other phone; unlike voice lines, people tend to spend much longer on BBS's, creating a more ample opportunity for tracing phone calls.

This, of course, is of no concern to the average user; using bulletin boards is, after all, both legal and fun. But it could pose some problems to the criminal. Depending upon what you choose to use this particular medium for, you may well want to consider how likely it is that calls are being monitored.

If this is of concern to you, there are several ways to negate any possibility of monitoring. As discussed earlier, it is quite easy to call from a pay phone. It is equally easy to call from a friend's house, work, or some other location. One could also invest in a telephone forwarding device located somewhere else, then forward calls to the BBS of your choosing. It makes it much more difficult to track phone calls. If you intend to make an occasional date and download some software, taking these precautions would be best described as paranoia. However, if you intend to organize a group of people to overthrow the government, such precautions make much more sense.

As with anything that involves the telephone, one must beware of the phone cops. Once upon a time the vast majority of boards were "pirate boards" and did such things as post long distance access codes, telephone credit card numbers of corporations and individuals, and information about how to produce the tone that would allow one to make free long distance phone calls. All of this combines to make some bitter memories for the phone cops. Additionally, with the number of corporations that are setting up their own private data networks, the phone cops need to make sure they are providing a secure network.

If your goal in life is to break into someone's computer system, you will most likely incur the wrath of the phone cops. And if you engage in patently illegal activities, it is also somewhat likely that you may run into the phone cops. The rule is a simple one: if you are going to engage in illegal activity, watch your ass.

The recent media attention has almost certainly guaranteed that everyone has heard the words "Trojan horse" or "virus," or both. And it has been stated over and over again that viruses and Trojan horses are distributed through bulletin board systems. This is quite misleading, and needs to be cleared up.

A virus is a program that continuously duplicates itself. A Trojan horse is a program that appears to be of use but actually performs some sort of malicious act (such as erasing files). The first Trojan horse is said to have been written by one SysOp who wasn't thrilled with another SysOp, but, of course, we don't know the true beginnings of the Trojan horse.

Should you be concerned about Trojan horses and viruses? The answer to that is yes and no.

You need not worry about logging-on to any BBS and taking advantage of any feature that it offers. Other than a power surge (and a surge protector that protects both your AC power and the incoming phone line is a very good investment), there is nothing that can happen while connected to a system that can damage your system. Logging-on to a system can not erase your files or damage your hard disk, nor can any feature that exists on that board.

The danger of Trojan horses and viruses comes from running software which you have downloaded. Again, it is not the downloading which poses the damage, but the secret code embedded into the software, which is activated when you try to run the software.

There are several ways to make using downloaded software less dangerous. There exist a number of antiviral programs which seek to stop or detect a virus. Most Trojan horses work in much the same way, and antiviral programs look for that particular pattern and alert you if it occurs. For example, should the blackjack program that you are running attempt to access the vector required to format your hard disk, the program would alert you. Other methods of protection involve calculating the CRC of your important files (the CRC is a number which is generated from the contents of a file, and would change if anything in that file had changed) and alerting you if they have changed (most Trojan horses go after specific files). There are programs that block access to your hard disk

drive. There are also programs that analyze another program line per line before it is run and attempt to find any of the common techniques used in designing a Trojan horse.

All of these programs are available for download on most BBS's. There are also commercial programs available which do pretty much the same thing. There is no way that you can be sure that ANY program you use is not a Trojan horse (commercial software has actually been infected and shipped to thousands of customers). However, these programs can be very useful in detecting a potential Trojan horse or virus.

There are also several other methods of protecting yourself. If you have a system that does not have a hard drive, placing a write protect tab (a write protect tab is a small piece of adhesive tape which covers a notch on the diskette; if this notch is covered the computer can not write to the diskette) on diskettes that you do not need to write to (especially your operating system disks) can be very useful. Additionally, it is a good idea to put a write protect tab on the diskette containing the program that you are testing. Remember, a blackjack program has precious little reason to write to disk. If you have a computer with a hard disk, you might want to try a program that locks out your hard disk during testing. Additionally, you can probably find an old copy of your operating system which does not support a hard disk, which would make your computer think that it doesn't have a hard disk and would make it impossible for a program that you were testing to do damage to your hard disk.

There is really only one true way of protecting yourself however, and it is the cardinal rule of computer use: *make backups frequently.*

Should Trojan horses frighten you? Of course not, for the vast majority of free software is exactly what it says it is and does exactly what it says it does. But there are a few programs out there which are designed to do damage to your computer system, and they are very effective at doing just that. You ought to be very careful when trying a new piece of software — whether it be commercially produced and purchased in shrink wrap or downloaded from a bulletin board for free — and observe what it does. While a number of corporations have put a flat out ban on the use of any software which is not pur-

chased from a commercial software vendor, many users have decided that there is very little risk and that it is a risk worth taking.

The final thing that the anarchist will want to remember is that anything you say can and will be held against you. This book is full of tips for avoiding linking you with your message; if you intend to engage in illegal activity, do heed them. Some folks leave their real name in the script questionnaire or leave their real phone number in the statistics section while logging-on for the first time. If you intend to engage in illegal activities, this just flat out isn't a very good thing to do. While the SysOp is generally the only person with access to this information, it is information that he or she could make available to others.

It has also been pointed out that all of the information contained in a computer can be destroyed in a matter of seconds if the SysOp chooses to do so. They may not choose to do so simply to cover your butt should you get involved in some sort of conspiracy that attracts the attention of your friendly local law enforcement folks. To the contrary, they just might cooperate, depending upon their particular views. It's worth repeating: if you're going to engage in any activity that is unlawful, you ought to protect yourself.

Your Own System

This chapter deals with operating your own system. You may or may not wish to run your own system, but this chapter deals with most of the elements you need to be familiar with if you decide to do so.

The first question you ought to consider is whether or not you really want a system. Systems can be expensive to set up and maintain. There will be time involved in the maintenance of the system, and you expose yourself to some liability. All of these factors will be dealt with in detail a bit later, and they are important factors to consider. While being a SysOp can be a lot of fun, it is also a lot of work and requires considerable capital outlay as well as monthly expenses.

While at the time of this printing I know of no statute or precedent which clearly defines the particular liability of a system operator, it would seem clear that there is certainly a risk of some exposure to liability for certain actions when one runs a system. It is, after all, the system operator who is responsible for the maintenance of the system and the creation and enforcement of rules and regulations regarding system use.

Certain aspects of this require a special mention here. Among these is the issue of copyrighted software. As you may be aware, the duplication of copyrighted software is prohibited by federal law, and is also protected by some pretty stiff civil penalties; it is not a good thing to do, and it is certainly not a good thing to encourage. Encouraging the illegal distribution of copyrighted software is most likely illegal, and certainly not something that you would want to get caught doing. If you don't choose to obey the laws protecting copyrighted software, you will probably want to be certain that you carefully screen your callers and don't advertise that copyrighted software is maintained (this is why "pirate" boards are so difficult to find). Regardless of where you happen to live, there is probably a law against deliberately allowing folks to upload copyrighted software.

Techniques which might make it easier to prove that you made due and diligent efforts to keep folks from violating the law include making sure that the name of the software is different from the commercial version, that serial numbers and copyright notices are removed, that a bogus statement about the software being freeware is included with it, etc. And, of course, if you intend to use your board as a place for folks to violate copyright laws, you will probably want to carefully verify any and all of your users whom you do not know.

Another activity which is not very popular with the police is exposing minors to pornography, lewd behavior, or other things which might tend to "contribute to their delinquency." Some boards have a very, very sexual flavor and make that pretty widely known. At least one board has been closed down by deliberately letting minors on and encouraging them to participate in indecent conversation (and the fact that it had a "paedophilia conference" and didn't bother to verify anyone didn't help matters much either). If the clerk at a convenience store can be served for allowing someone who looks 24 but is actually 18 buy a copy of a girly magazine, think of what could happen to the SysOp who has a paedeophilia conference and encourages kids to log-on.

An awful lot of the modeming community are young folks with much to contribute; you most likely don't want them on your adult conferences, however. Again, it's your equipment,

and who you choose to let on and what you decide to let them do is up to you. But it's well worth remembering that someone may get upset about their little angel reading dirty messages (and if you think they won't, think back to the 976 phone numbers; someone is always suing the telephone company because their lambkin was lured into calling the number and dropping hundreds of bucks talking about sex). This is one of those things that can get you into trouble if you're not careful, and you need to be aware of the danger involved.

You'll note that a few of the previous chapters have mentioned certain activities which may conflict with various federal, state, and local laws, including conspiracy, prostitution, grand theft, and other violations. You were warned in those chapters to be very careful with respect to these activities. As a system operator, your exposure increases. Some boards have serious conversations about doing very illegal things to local officials, and some are serious meeting places for groups that would and do advocate violence against other parties. These activities are illegal, and allowing folks to use your board to discuss them will most likely subject you to "conspiracy to..." allegations. A bit later we'll discuss various ways to protect yourself.

As you've read time and time again, the difference between being safe and being in a heap of trouble lies in verifying your users. Free speech, a nifty concept, is a limited right indeed. You may consider it your fundamental right to allow folks to say anything that you choose on your board, even if that involves bombing the local embassy of some country that you don't like. Your local law enforcement community, however, will have a very different idea, and it is important that you take the time to verify your users.

The bottom line is that you may well be responsible for anything that happens on, or as a result of, your board. This is something that you need to carefully consider as you set up your board and add new users to it.

If you have decided to set up your own system, you will need a variety of things, which can be roughly grouped as hardware, communications, and software.

Hardware will be your biggest investment and consists of physical machinery and devices. The computer, monitor, and modem are all hardware. In order to set up a system, you will need a computer, a hard disk drive, a monitor, and a modem. You may well want to buy a tape drive and a printer too. While you don't need to have a surge protector, you're definitely strongly encouraged to own one. The next few pages will cover all of these components in turn.

You must, of course, have a computer if you intend to have a board. There are literally thousands of different brands of computers out there. By far the most prevalent is the IBM-PC compatible computer. While it is not my policy to endorse products, I'd definitely recommend that you purchase a copy of *Computer Shopper* and thumb through it. You'll find computers starting at $300.00.

There are a few things that you should consider when purchasing your computer (and the computer is technically the central processing unit, which, if you are a complete novice, is the big box into which everything else is plugged).

A bulletin board is perhaps the most demanding thing that you can put on your computer. Most computers for home use are designed to run a few hours a day. After all, in the typical office, the computer might run eight or ten hours a day. Few computers are run twenty-four hours a day. If you want your board to be successful, it will need to be up twenty-four hours a day. A few boards are operated only at night and on the weekends, but they generally get few callers. Your computer will need to run twenty-four hours a day; you should be sure it has a good fan, an adequate power supply, and is rated for continuous operation.

Memory is also an important consideration. Computer memory is of two kinds, short and long term. Long term memory is stored on disks, either fixed or floppy, and is maintained even when your computer is turned off. Short term memory, called RAM (random access memory, which means that you can read and write to it, as opposed to read only memory (ROM), which contains instructions for your computer which you cannot change), is the area in which the computer does its work, and the more RAM you have, the more work your computer can do. A detailed explanation of RAM is

really not in order here, except that you do need a minimum amount of it in order to run a system.

Unless you are investing in a very expensive computer, you'll find that you can't do very much with it other than run your bulletin board (more expensive, faster machines with expanded memory lend themselves more readily to multitasking). It's tempting to buy a machine with 256k of memory; it is usually well worth the extra money to expand the memory to 640k. If you don't have enough memory, you can't run your applications — there's no getting around it. If you don't have enough memory, you might as well have none at all.

Your computer will also need two cards: a display card and a communications card (if you use an internal modem, you will not need a communications card). The display card is essential, because it allows your computer to send information to your monitor. Be sure that your computer has one, and if it doesn't, be sure that you calculate the price of a display card when you are comparison shopping. Some folks offering "bare bones" systems don't have a card or a keyboard, which makes the price appear much lower than it actually is. You also need a communications card if your computer is not equipped with a serial port (that's what your modem plugs into). If the computer that you are considering doesn't have a serial port, be sure it has an empty "expansion slot" (your cards plug into expansion slots) so that you can add one.

Next you will need a hard disk drive, which are best purchased already installed in your computer. Hard disk drives are sold by the meg (one million bytes or characters)of storage space. The most common sizes are 10, 20, 30, and 40 meg, though there are drives which hold over 400 meg. If you buy a 10 meg drive, you will be able to store approximately 10 million characters. Ten meg isn't much space, and the difference in price between it and larger drives is nominal. 20 and 40 meg drives are far more popular, and the 40 meg really isn't all that much more expensive. A good rule of thumb is to buy as much storage space as you can possibly afford.

The hard drive is somewhere where you will not want to skimp. It is a place where you can save a considerable amount of money, but it is also a place where you should not skimp. Every time a user calls your board, all of the information that

they see will come directly from the hard disk drive, and any information that they leave will be stored on the hard disk drive. This can amount to thousands of disk drive accesses in a day, and, unlike the rest of your computer, the disk drive is a mechanical device which is subject to wear. A very simple description of how it works is that the disk spins and a magnetic head floats on top of it and reads or writes to a given place. As you might imagine, the likelihood of this particular piece of equipment being the first to fail is quite high, and increases as the frequency of use increases. A few extra dollars spent here will most likely be a good investment.

Unless you know what you're doing, you probably don't want to install a hard disk drive yourself. It's relatively easy, but it's usually a good idea to let a dealer install it. Disk drives are one of the weakest links in a computer system, and it's generally a good idea to let someone else take the risk involved in installing and testing one.

Monitors are a place where you can usually skimp a bit and pocket some savings. You can buy a very nice monochrome (or one color) monitor for under a hundred dollars, or you can invest thousands in a top of the line state of the art, color monitor. I personally like reading text in all one color; if you intend to do a bit of computer aided engineering or play the latest computerized games, a color monitor would be a good investment; otherwise, the cheapest monitor that you can buy will usually suffice.

The final piece of hardware that you must have is a modem. The big difference in modems is speed. Modems are sold by baud, which corresponds to the number of characters which they transmit or receive per minute. A 300 baud modem transmits approximately 450 words per minute; a 1200 baud modem transmits approximately 1800 words per minute.

Modem speed is very important. Unless you want to attract lots of kids and folks who log-on once and never call again, don't buy a 300 baud modem. You can buy a 1200 baud modem almost as cheaply, and both you and your users will be far more satisfied. Please don't buy a 300 baud modem; it's just not worth the savings. By far the most popular modem is the 1200 baud speed; I've owned one that I paid $79 for three years ago

and have had no problems with. 2400 baud modems are also popular, and have the advantage of being able to transmit at 1200 baud if your caller is operating at that speed. 2400 baud modems tend to have more line noise problems than 1200 baud modems, however. 4800 baud modems and 9600 baud modems are also somewhat popular.

As you might imagine, the faster the modem the more you will have to pay for it. How fast a modem you need will depend on whether or not you allow file upload and download. If you just have messages, 1200 baud is fast enough. If you have files for people to download, the faster modems make for much quicker downloading.

Modems come in internal and external varieties. Internal modems sit inside of your computer, don't take up desk space, don't require separate power, and are usually somewhat cheaper to purchase. External modems are self contained, have a separate power supply, and connect to your computer with a separate cable. Most SysOps use external modems because they feel they are somewhat more dependable, and they also like to be able to watch the status lights to determine what is going on at any given time (external modems have a panel with lights to show whether the modem is transmitting or receiving, at what speed, etc. — internal modems do not). The cost difference is not a major consideration, though you will usually save a few dollars if you opt for an internal modem.

You should buy surge protection for both your computer and your modem. Most systems are up 24 hours a day, seven days a week. What this means is that you have a much greater chance of having your computer operating during an electrical storm. You also have greater exposure to power surges, which are generated by most electrical motors and are definite computer killers. A surge protector, depending upon how well it works, will stop voltages above 120 from reaching your computer. They're well worth the money.

On the optional equipment list is a printer and a tape drive. A printer is very useful. There are lots of things that are worth committing to paper. A printer allows you much greater flexibility in fully utilizing your computer; it's something that is nice to have but not a necessity. You will want to back up your system on a regular basis (remember our discussion about

Trojan horses? Computers also lose data for no apparent reason). You may want to do this on floppy disks, which are reasonably inexpensive. Unfortunately, this can take quite a while, and you have to be nearby to change disks when one fills. A tape drive will cost you several hundred dollars, but will back up your entire hard disk in a matter of minutes, is far quicker than floppy disks, and doesn't require you to be present.

You will also need communications. Don't think about using your existing phone line; it just won't work. Your computer needs a separate line of its own. As a point of interest, some telephone companies will charge you the more expensive business rate if they know you intend to run a BBS on the line; this may affect what you decide to tell them. I know several people who have their regular line running on the same wires with their computer line. This can cause problems. If you can talk the phone company into running a whole new twisted pair, it would be a good thing to do. Also, you don't need special features: call waiting causes the computer to hang up; you certainly don't want it on your modem line. You don't need anything more than a basic line; your computer doesn't require anything special to do its job.

Finally, you will require software. There are, as you might imagine, several ways to acquire this.

First, as you have learned, there is free software. Both RBBS and PCBoard are now available in shareware and public domain versions. These are not the latest versions, but they are very functional indeed. Additionally, Wildcat! is available in a shareware version (like all shareware products, you are expected to pay for it if you decide to use it). There are also a number of other software packages available. You can simply download them from a local board, or perhaps you will want to get a friend to make copies for you. In any event, the choice is quite broad, and all of the packages which I have encountered come with ample documentation.

There is also commercial software. There is much to be said about buying software. First, you get much more than you do with the shareware version. Numerous features are not enabled on the shareware versions of many software packages, and many of these features are quite useful. Most commercial packages also come with some sort of free telephone support,

which is quite useful in setting up a new software package, particularly something as complicated as a communications package. Software authors are much more willing to answer the questions of paying customers than they are the questions of those who are using the product but have elected not to purchase it.

Another solution is to write your own software or find a friend to write it for you. This gives some people a tremendous amount of gratification, and it can indeed yield a system that provides all of the features that you want. It is very similar, however, to manufacturing your own toaster. If you really want to do it, you can — all it takes is an awful lot of hard work. On the other hand, it's usually cheaper and more professional to just go out and buy one already assembled. Most good software packages are the result of thousands of hours of programming.

It is important that you choose the software which best suits your needs. As you might imagine, there are a number of differences between the different software packages. Some packages are exceptionally simplistic. Others are far too complex to be enjoyable. You will need to find the one that best suits your needs.

You will want a system that will support all of your users. While this sounds simple, I have actually seen a software package which will only support twenty users. Obviously, you will want to find a package that will support a large number of users (most packages are limited only by the amount of free space available on your disk).

You may also want a package that supports file uploads and downloads; as a rule of thumb, the more protocalls available, the more compatible your system will be. Protocalls are the error checking methods that the software uses to insure that what is sent is also what is received, and there are a number of different methods for doing this. Most packages support the three or four most popular protocalls.

Security is also a factor that you must consider. Even if you want to have a wide open board (and you probably do not), you will want to have some way to keep people from logging-on as SysOp or attempting to log-on as other people. A good software package will disconnect a user after a failed password

attempt or two. Some packages, however, will allow someone to guess indefinitely. You will also want to be sure that the number of security levels available allows you to adequately govern your system and restrict access as you see fit.

Some systems offer some other very useful features. One of the most valuable is the ability to log-on as the SysOp from a remote location. This is a particularly valuable option if you are going to locate the machine in some location other than your home or office. Also very useful is a feature which allows you to schedule certain events to run at a later time: having the system back itself up and delete all the old messages every morning at three o'clock can be quite helpful.

Finally, there are a number of other special features you may be interested in. "Doors" are programs that can be run by the user (most popular are on-line games) and are sometimes quite popular. Graphics appeal to some people and are supported by some packages (but seriously slow down the system and are generally superfluous). Like all products, there are a number of different options and features that vary with each product.

Depending upon the nature of your board, you may or may not wish to actually set your board up in your home or office. There are pros and cons to having the system set up in your home. There are also distinct advantages and disadvantages to having it set up somewhere else.

There is a great deal of convenience to having the board close by. It makes it easy to back up, to power down in case of electrical storms, and to perform any functions which the board will not let a SysOp perform by remote control (there are several such functions in most software packages). It also makes it possible for the SysOp to break-in to "chat" (a mode where the SysOp and the user communicate directly), or to validate users on-line. These are all things which may well be of importance to you, and they are things that you can only do if you elect to have your board in your home.

On the other hand, if you elect to have your board in some remote location, it puts a bit of distance between you and the board. This can be important if you choose to have a board

which permits the committing of crimes. The phone company loves to have you come to its office and pay your bills in cash, and they'll usually allow you to have your listing in almost any name you choose.

Some SysOps go to the trouble and expense of having the incoming phone calls forwarded to a remote number. This doesn't require a lot of equipment (a telephone forwarding device is available for less than $100 in electronics stores, and is often available even less expensively through the mail). It does require the expense of an additional phone line, and it does pose some problems for the user.

The problem call forwarding poses for the user is one of interacting with the software package. Most popular communications packages will disconnect the call if it is not "connected" within a certain time limit. Should you forward your calls to another number, it is very likely (and I speak here from personal experience) that most of your users will get cut off before forwarding is complete. As you might imagine, this makes your users quite frustrated. While they can set their communications package to allow enough time, this is quite a bit of needless trouble. It is also worth noting that this same problem exists when you have a system which forces your user to reset their options in order to call your board.

Finally we get to what is, for the SysOp, the "fun part." What is your theme going to be? The theme of the board determines who calls your board on a regular basis and how much action (and what sort of activity) your board will see.

Something as simple as the name of the board will affect who calls it the first time, and the many lists which are compiled listing the local area boards will refer to your board by name. Only you, of course, can decide what is an appropriate board name. Some are descriptive while some mask the board's true flavor.

Your users will follow the board's theme. The board's theme is determined, to a great extent, by the SysOp. It is the SysOp that will set up the conferences and post the rules.

Some boards hide a secret theme. It is fairly common to say that the intention of your board is one thing and have a hidden agenda. This is made possible by having a mixture of public and

private conferences. Most often, the private conferences reflect the board's true flavor and are not available or even listed to the users until the SysOp has made the determination to give a particular user access. This is a common way to carefully screen users to make certain undesirable persons are not able to read incriminating material.

Your theme will dictate (or at least should dictate) who you decide to let on your system. While the next few pages deal with access controls and other security issues, your security philosophy is something that you will want to think about.

There are a number of different philosophies with respect to access. Some systems allow anyone to log-on and use the system indiscriminately. Others allow virtually no one except close personal friends to use the system. Most systems offer some level of accessibility between the two. While it is ultimately your responsibility to determine how accessible your system will be, there are a few principles which should guide your decision.

A few popular systems allow anyone to use the system. Most do not. A surprisingly large percentage of boards are closed to all but adults. There are several reasons for such a policy. One reason, of course, is to make due and diligent efforts to prevent the distribution of obscene materials to minors. It doesn't take much anymore to be considered obscene, and some SysOps have decided that rather than play "four letter word police" it is much simpler to close the board to any user who is not yet eighteen.

Other systems allow only contributing (i.e., those who have paid a fee) users on the system, and still others have quite stringent verification of all new users. If you're going to advocate overthrowing the government on your board (or allow your users to do so) you will want to be very selective about who you allow on your board.

Fortunately, most systems have some sort of access control system. The most popular packages have several options available which allow the SysOp to determine just how restrictive the environment will be.

As we discussed in an earlier chapter, there is a log-on procedure that newcomers must follow before they are allowed to

use the system. As we also discussed, there are a series of questions that the SysOp can require a new user to answer before he or she is granted access. In most cases, the system will throw someone off if they refuse to fill out the required information. It is usually possible for you to set the level of security which is provided. Many systems allow you to collect the necessary information and then hang up on the user and not let them use the system again until you have verified the information. It is also possible for you to allow new users limited access until verified. Many boards have fairly nonsensitive material on the main board area, so this is usually safe, and it allows the user to browse the board to see if they like it. How many privileges a new user is granted is normally up to the SysOp.

Access controls also make certain that the people who are logging-on are actually who they say they are. You'll find that people attempt to get onto the board under someone else's name. Even on boards that have fairly lax access controls, people nonetheless attempt to break in. It's normally a good idea to look at your caller log from time to time to be certain that there is no pattern of this sort of thing happening.

No matter how good the software is, a careless SysOp can negate all of the security which is built into the software. Verification is a relatively straightforward activity that simply must be done if you intend for your system to be a safe place to express your opinions. How far you want to go in verification is a matter of personal preference, but the more extensive your verification program, the less likely that some user on your board is merely collecting evidence to use against you. If you intend to run a family oriented board, this will be no big deal. If, on the other hand, you intend to allow your users to call in their bets on Sunday football games, this will be a bit more important to you.

The first level of verification is the simple act of calling the number that has been left and talking to the person who logged-on. This method is not completely effective (one can simply say "this is he" when you say "Is Bubba there?"), but it does tend to screen quite a few users that you would not wish to grant access to.

There are also several other steps that you can take to assure that your users are actually who they say they are. One of the most simple is to look up the name that they give you in the phone book to ascertain that the name, phone number and address they gave you are legitimate. This, of course, is of no relevance if the person in question has a non published phone number, though the local street directory can be quite valuable in this respect.

Some SysOps also require mail verification, requiring new users to send photocopies of their driver's licenses. Boards that charge a fee sometimes require payment by check. Again, the amount of effort that you put into verification is a personal choice, but as a rule, the more time and effort you put into it the more certain you can be that the people calling your board are actually who they say they are.

Conferences are the life of a system. Conferences allow users to discuss ideas and topics that are of importance to them and avoid those topics they have no interest in. They allow the techie group to discuss ram chip technology while the pervert crew is discussing sex with flaming animals. Users will normally migrate towards the conference which most interests them. Diligent use of conferences (as opposed to allowing a lot of main board posting) allows users to use the system regularly without encountering a lot of messages about topics which they have absolutely no interest in.

Conferences also have an alternative use. They allow you to move more sensitive material to a conference that only select users have access to. Most boards have some private conferences (some boards don't even list them on the conference directory). This is one way to exercise more control over what new users (or users you're a bit uneasy about) see.

Security issues are enforced on most boards through software security levels which are assigned to each user. In essence, each board function (such as reading a message, killing a message, going to the "Let's kill the mayor" conference, etc.) has a security level which the user must have to be able to use that particular function. Likewise, each user is given a specific security level by the SysOp. Security levels also determine how much time a user is granted each day.

It is generally a good idea to set up a list of board functions as well as a corresponding list of security levels as you begin to set up your new board. That way, you can make logical decisions about which features you will allow your users access to. For example, you might want only validated users to be able to join the conferences while restricting new users to reading and leaving messages on the main board. Or, you might allow new users to read mail but not leave messages. Or, you may want to only allow supporting users to download files. In any event, you will probably not want to let *any* of your users read receiver-only mail or exit to the computer's operating system. You might have an assistant who you will allow to modify the user base, or you may want to restrict access to this information to yourself. In any event, a few minutes spent figuring out what you want to allow each group of users to do is time well spent.

As you might imagine, running your own board involves quite a bit of time. How much time, of course, depends upon how many users you have and how much involvement you choose to have. In general, however, you will spend a considerable amount of time maintaining the board.

A disk drive can hold only so many files and messages. You will have to delete old messages on a regular basis, both because of this limitation and because most software will not support an unlimited amount of messages.

You will also have to spend a considerable amount of time reading mail. Many users leave mail to the SysOp, and almost all new users will leave a comment asking to be granted access. Users will frequently leave questions, comments, and other mail that will require your attention.

You will also have to invest time in new users. Even if you do not have a verification process, there is still the need to at least change their security level. If you do indeed verify, there is the time involved in that as well.

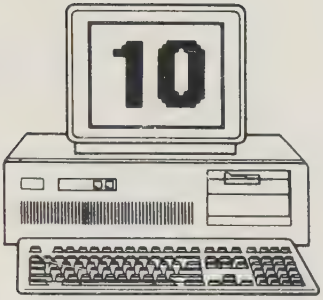
Additionally, you will have to back-up your system on a regular basis; this can be an automatic process or may require your intervention, depending upon your equipment.

In any event, the running of a bulletin board requires a great deal of time, and there is really no way of avoiding the necessary chores that being a SysOp mandates.

There are also expenses involved in running your own board. In addition to the initial equipment costs, there are monthly costs which you will incur. There is an additional phone bill and the additional electricity consumed by whatever equipment you have. It is quite likely that over time parts will malfunction and need repair. Computer repair is not cheap, and certain parts are better replaced than repaired. Depending upon your luck, these repairs can be infrequent and inexpensive or quite frequent and quite expensive. The costs are something you should be aware of before starting your own board.

Certain boards have countered the cost problem by charging users fees for access. The reaction to this type of scheme is mixed. *CompuServe*, while not a bulletin board system, is a major information network which has been very successful charging for access. Several bulletin boards charge and are very popular. Others, however, died rapid deaths when they attempted to introduce a fee structure. The average person, after all, calls more than one board, and if they were to pay for access to all of them it would quickly become very costly. The boards that have provided increased services and multiple incoming lines have had a much easier time with getting users to pay for access. I've seen several boards offering six lines each, and the users don't seem to mind paying for access when confronted with the great expense that the SysOp absorbs running the board. I know of one person with two systems, and a total of twelve incoming lines. This particular system is part of several nationwide links, and serves as a meeting point for persons with varied needs and interests. It has been in existence for nearly a decade, and has subscribers who have been using the service that long.

A word of warning though. Some folks get pretty carried away with their boards and get into the "playing daddy" syndrome. It becomes quite easy for the SysOp to become so concerned that the operation of the board becomes far more important than it ought to be. You wouldn't be the first SysOp to offer psychological advice to your users or to spend numerous hours worrying about the flavor of the board. The playing daddy syndrome is indeed something that is easy to get into, and something to be avoided.



Afterward

In wrapping up, I hope it has become apparent that the BBS is the medium of the future. It is a medium that allows a great deal of fun, education, and, if you are a hell raising sort of person, anarchy. Anarchy is a dangerous business, but it is one that the BBS makes far easier and far more effective.

There are a few new developments that you ought to be aware of, and in this, the closing chapter, it seems quite fitting to bring them up.

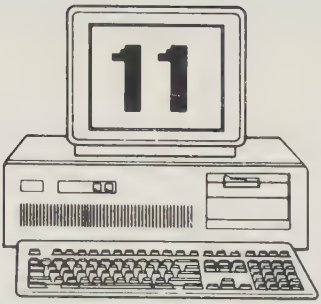
First, the BBS is beginning to attract attention as a medium for Trojan horses and viruses, and the media is having a field day saying horrible things about them. This may well bring greater scrutiny of BBS's in general — something that makes the BBS user who intends to do a bit of anarchy need to be even more careful.

Second, there is a tough new federal law against breaking into certain computers. If your goal is to hack your way to fame, you need to be aware that it is unlawful, and there has been more enforcement of the law lately. Other laws are pending.

Third, several phone companies have begun charging business rates for phones to which modems are attached, claiming that the BBS is a business function; it might behoove you to avoid telling them what you are doing with a second line.

Finally, the addition of new switching equipment has made communication on certain telephone exchanges at speeds in excess of 1200 baud impossible.

In all, the BBS can be your friend; enjoy it, and, as with all activities, if you intend to violate laws, be careful.



Sources

The following list is intended to lead you to sources for various equipment, supplies, services and information. It is not, by any means, a comprehensive list. The inclusion of a supplier on this list is not intended to be, nor should it be considered to be, an endorsement, nor is the exclusion to be deemed unfavorable. It is simply a list of a few suppliers with whom the author is familiar.

There are, of course, numerous local establishments carrying a full line of equipment and supplies.

Computer Hardware

DAK Industries Inc
8200 Remmet Ave
Canoga Park, CA 91304
1-800-888-7808

DAK has a variety of computer-related products, knowledgeable technical support people, and reasonable prices. A catalog is available, and product offerings change frequently.

Computer Shopper
PO Box 51020
Boulder, CO 80321

Computer Shopper is the single largest collection of computer suppliers in any one place, and is published monthly. Hundreds of mail order firms run monthly advertisements here. If not available at your local newsstand, subscriptions are available.

Communications Software (retail)

(NOTE: Software usually, but not always, is included with the purchase of a new modem.)

DataStorm Technologies (Procomm)
PO Box 1471
Columbia, MO 65205
(314) 449-9401

Clark Development Company (PCBoard)
PO Box 71365
Murray, UT 84107
(801) 261-1686

Surf Computer Services (Oracomm)
61725 Melton Trail
Joshua Tree, CA 92252

See also *Computer Shopper's* listings.

Communications Software (public domain & shareware)

Gemini Marketing Inc.
(RBBS Procomm, and other packages)
Box 640
Duvall, WA 98019

Sizzleware
(RBBS, Procomm, Wildcat!)
PO Box 6429
Lake Charles, LA 70606
(800) 356-2697

(Note: Both of these companies offer shareware or freeware versions of software for under $5.00.)

CompuServe

CompuServe Information Service
PO Box 20212
Columbus, OH 43220

(800) 848-8990

The following trademarks are acknowledged:

CompuServe is a trademark of H & R Block.

Computer Shopper is a registered trademark of Coastal Associates Publishing, LP.

Hayes, SmartModem and Smartcom are registered trademarks of Hayes Microcomputer Products, Inc.

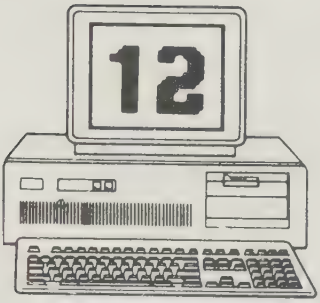
IBM is a registered trademark of International Business Machines, Inc.

Oracom is a registered trademark of Surf Computer Services.

PCBoard is a registered trademark of the Clark Development Company.

RBBS is a registered trademark of Tom Mack.

Wildcat! is a registered trademark of Mustang Software, Inc.



Recommended Reading

While there are numerous books available which can be of great use to the new bulletin board user, the following list highlights what I feel to be some of the most valuable. You can, of course, find a much larger selection at your public library.

Available from Loompanics Unlimited.

The Computer Underground
Author: M. Harry

A synopsis of the entire Computer Underground community, covering everything from pirating to phreaking, with sections relating to bulletin boarding.

The Hacker's Handbook
Author: Hugo Cornwell

A comprehensive study of hackers and their tactics, with sections which cover bulletin boarding.

Available at your local bookstore or public library.

Communication and Networking for the IBM PC & Compatibles
Authors: Larry Jordan & Bruce Churchill

One of the definitive reference books on communications with IBM and compatible microcomputers. Includes information on software and hardware relating to general communications and local area networking.

Complete Electronic Bulletin Board Starter Kit
Authors: Tom Mack, Charles Bowen & David Peyton

This 432 page work on bulletin boarding includes a copy of Tom Mack's RBBS bulletin board program.

How To Get The Most Out of CompuServe (4th Edition)
Authors: Charles Bowen & David Peyton

One of the most comprehensive books on *CompuServe* ever written, fully covering all of the system's features and usages.

The Modem Reference
Author: Michael Banks

This book deals with the various aspects of electronic communications, and includes a section on bulletin boarding.

Online Communications Software
Authors: Ruth Ashley and Judi Fernandez

This book deals with a variety of communications programs in detail, as well as providing a detailed look at electronic communications in general.

YOU WILL ALSO WANT TO READ:

☐ **40036 COMPUTER UNDERGROUND,** ***by M. Harry.*** This book should be read by everybody who has personal records on computer files — which is to say, *everyone*, since there are an estimated 38 to 50 computer data banks that keep records on each and everyone of us. This book reports the tricks of the computer crook's trade. Some basic security rules are discussed and methods that are used to defeat the rules are explained. No other book takes you behind the scenes to meet the computer criminals and show you their methods. *Highly recommended.* ***1985, 8½ x 11, 280 pp, illustrated, soft cover.*** **$14.95.**

☐ **40064 COMPUTER-RELATED CRIME.** This manual was prepared for the exclusive use of the US Army Central Intelligence Division. It provides explicit details on how computer crime is perpetrated, how to detect it, and how to prevent it. All the modern techniques of criminal computer activity are described in this book: *Data Diddling, Trojan Horse, Salami Techniques, Superzapping, Trap Doors, and much, much more.* For each type of crime, you learn who the likely culprits are, methods for catching them, and what evidence you need to prove your case. ***1990, 8½ x 11, 79 pp, illustrated, glossary, soft cover.*** **$10.00.**

☐ **19106 POISON PEN LETTERS,** ***by Keith Wade.*** A complete guide to getting revenge through the mail. If you've had problems with people or organizations that seem too big to fight back against, then this book is for you! Covers individuals, corporations and government agencies. Includes nearly 100 letters, along with tips on stationary, mailing and how to keep from getting caught. *Sold for informational purposes only!* ***1984, 5½ x 8½, 103 pp, soft cover.*** **$9.95.**

And much more! We offer the very finest in controversial and unusual books — please turn to our catalog announcement on the next page.

BBS2

LOOMPANICS UNLIMITED
PO Box 1197
Port Townsend, WA 98368

Please send me the titles I have checked above. I have enclosed $ (including $4.00 for shipping and handling of 1 to 3 titles, $6.00 for 4 or more.).

Name _____

Address _____

City/State/Zip _____

(Washington residents please include 7.8% sales tax.)

"Yes, there are books about the skills of apocalypse — spying, surveillance, fraud, wiretapping, smuggling, self-defense, lockpicking, gunmanship, eavesdropping, car chasing, civil warfare, surviving jail, and dropping out of sight. Apparently writing books is the way mercenaries bring in spare cash between wars. The books are useful, and it's good the information is freely available (and they definitely inspire interesting dreams), but their advice should be taken with a salt shaker or two and all your wits. A few of these volumes are truly scary. Loompanics is the best of the Libertarian suppliers who carry them. Though full of 'you'll-wish-you'd-read-these-when-it's-too-late' rhetoric, their catalog is genuinely informative."

—**THE NEXT WHOLE EARTH CATALOG**

THE BEST BOOK CATALOG IN THE WORLD!!!

We offer hard-to-find books on the world's most unusual subjects. Here are a few of the topics covered IN DEPTH in our exciting catalog:

- *Hiding/concealment of physical objects! A complete section of the best books ever written on hiding things!*
- *Fake ID/Alternate Identities! The most comprehensive selection of books on this little-known subject ever offered for sale! You have to see it to believe it!*
- *Investigative/Undercover methods and techniques! Professional secrets known only to a few, now revealed to you to use! Actual police manuals on shadowing and surveillance!*
- *And much, much more, including Locks and Locksmithing, Self-Defense, Intelligence Increase, Life Extension, Money-Making Opportunities, and more!*

Our book catalog is 8½ x 11, packed with over 750 of the most controversial and unusual books ever printed! You can order every book listed! Periodic supplements to keep you posted on the LATEST titles available!!! Our catalog is free with the order of any book on the previous page — or is $5.00 if ordered by itself.

Our book catalog is truly THE BEST BOOK CATALOG IN THE WORLD! Order yours today — you will be very pleased, we know.

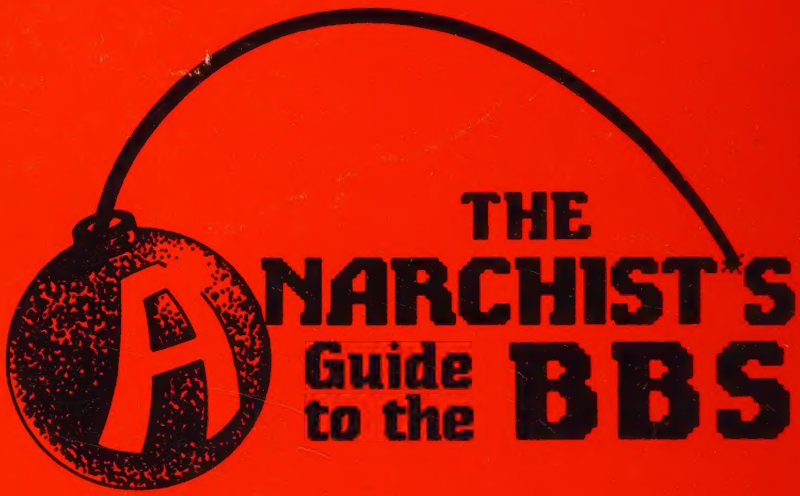
LOOMPANICS UNLIMITED
PO BOX 1197
PORT TOWNSEND, WA 98368
USA

"This guide is superb at explaining both how to use computer BBSs and why you would want to. Recommended.

— Reading for Pleasure

"This book, along with a modem, will enable you to jack into cyberspace and join the global village of fellow anarchists, technohippies and cybermutants."

— MongoStack



The Anarchist's Guide to the BBS takes you inside the fascinating world of computer Bulletin Board Systems. BBS's are electronic meeting places where people transact business and trade fantasies. BBS's are useful, fun, and sometimes dangerous and strange.

A coven of witches, electronic sex screens, credit card criminals, bizarre dating services, saboteurs, fetish clubs, hackers... all these and more can be found lurking in the electronic underground. You can watch their antics — or join them, if you dare!

There are few rules covering computer networks. Those who use them can be anonymous and impossible to trace. Is it surprising that BBS's have become the medium of choice for those who seek unlimited freedom of expression?

Author Keith Wade has spent six years in the electronic underground. An expert on computer security and an avid fan of the BBS, Wade takes you on a lively journey through an invisible electronic universe. What you find there will surprise you.

ISBN 1-55950-037-9

KR-214-342